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TORONTO

COMMERCIAL RESEARCH

An Outline of Working Principles

BY

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TO
B. S. D
AND
H. S. D.

PREFACE

The theory of this book can be simply stated; it falls readily into a series of propositions which have guided the writer from first to last in the composition:

1. The immediate and primary need of business to-day is intelligent direction and control, individually, generally.

2. Intelligent direction and control of business can be had only by a better knowledge of business principles.

3. A better knowledge of business principles can be derived only from a careful and comprehensive survey of business facts.

4. To secure a careful and comprehensive survey of business facts is a problem for business research.

5. Therefore, the immediate and primary need of business to-day can be met only by business research.

This means, also, that the research work so well begun in the field of production should be carried over into trade, into buying and selling. The beginning and the end of every business enterprise is a marketing problem. The problems of marketing, therefore, like factory problems, must be isolated, abstracted, analyzed after the scientific method. More deliberate, concentrated, prolonged and undisturbed thinking ought to be applied to business problems. They are of vital importance to success; they are fascinatingly interesting in themselves; their very difficult complexity is a stimulating intellectual challenge; the rewards which their correct solution offers have no determinable limit.

It is further held that more intelligent business direction and control is better business, in every sense of the word. In commercial activity, as in every other field of human endeavor, truth sets men free,—free from narrow tradition, from prejudice, from short-sighted, selfish policies. The more intelligent business of to-morrow is certain to be better business.

The material in this book is immediately usable. It is not an abstract and general preachment, but a guide-book to practical research methods. It is applicable to every man's business whatever the type or size.

The writer desires here to state publicly his appreciation of the sympathetic interest of his colleagues in this work. He is more indebted to the helpfulness of Miss Margaret Nichols, of Chicago, for her skill, speed, accuracy and intelligence in transcribing notes. The most he owes to his wife, Beatrice S. Duncan, for her continued help and encouragement.

C. S. DUNCAN.

Washington, D. C.
August, 1919.

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COMMERCIAL RESEARCH

CHAPTER I

INTRODUCTION

A new era — Coöperation and coördination — Use of scientific knowledge — Business duties — After-the-war trade — Unsolved problems — Facts and experiences to be utilized — Old calculations invalid — Industrial research — Commercial research — Purpose — The plan — The need for research — Character of commercial research — Sources of business facts — Nature of business facts — The method of collecting facts — Analysis of business facts — Presentation of business facts — Interpretation of business facts — Organization for research — Some fundamental principles of business analysis — The new business — The material — The method — The point of view.

The New Era. There is a common belief that a new era was begun with the recent great world conflict. It is certainly true that during such times of stress, changes in all phases of life are both rapid and radical. The ideas of yesterday that were new, untried, and chimerical may become the commonplaces of to-day. As one looks back over the past years, he realizes how far away from the pre-war attitude he has drifted. These changes, rapid and radical in character, will affect us all in our manner of thinking and in our way of living. There must be new adjustments; there must be new relationships; there must be a revision of old theories and a planning of new policies.

Such a belief as this is, of course, largely made up of a faith whose substance is the things hoped for rather than what has been demonstrated or experienced. It may be that through the fiery trials of recent years human re-

lationships have been purified and made nobler. One fact, however, is worthy of note; through multifarious social and political changes trade persists. The new age, like the old, will be built on a foundation of commerce. What this commerce is to be, what rules of the game are to be adopted, what organization for trade will result, what prevailing spirit will animate it, are the points of vital interest.

Human nature, however, is made of a tough fiber that is hard to reshape. After every severe wrench there is a reaction, a settling back toward the old status. What is new must still justify itself. Nevertheless, it would seem obvious that, whatever the new life may be in character, it must be different from the life of the past. New forces are let loose in the world that will not be curbed.

There will be, for instance, as one powerful new influence, a great army of American youths who have seen a new world. Their view will have become broader. They can be no longer so provincial; they will have learned many things which they cannot forget. The new life in all its aspects depends very much upon what they will do with what they learn. At home, too, there have been new experiences whose influence will be lasting. An instance of this is government control over industry with its entirely new basis of calculation. The great contrast between private control and public control over industry is that which exists between cost and effectiveness. The broad aim under government control was to win the war,—to marshal all possible forces effectively for an uneconomic purpose,—that is, to destroy, not to produce. "Victory at any cost" became the slogan. In other words, the effectiveness and not the cost was the primary consideration. Under private control, in winning trade, cost is the first question. Only the most temporary policy will run

the price returns below cost. Otherwise it is business suicide. But we have nevertheless experienced this period of centralized control, the effectiveness or ineffectiveness of which we shall discover. This influence will not soon pass away.

It may further be observed that this is not an adventure into socialism. Private property still remains private property even in the most fundamental productive enterprises. For the moment, and for the purpose of national defense,—a defense of home and honor as well as of property,—private interests are submerged in public welfare. But there is as yet no reason to believe that with the disappearance of the national danger private interests will not again emerge. The world may be greatly different after the war, but human wants will still exist and the economic struggle to satisfy them will persist. Business will resume and upon a pecuniary basis.

Purchasing power, too, has been greatly changed. This applies not only to the United States, but also to all countries touched by the war. Some have earned money who have never earned it before; many others have earned more than they ever dreamed of. The effects of this redistribution of wealth cannot be foreseen in their full import, though it is apparent that changes will inevitably be wrought — socially, politically, and commercially. This affects both individuals and nations. The center of gravity of gold has been disturbed. There was established an embargo on the exportation of gold from the United States because of the accumulated reserves; the same thing was done in England because the supply was depleted. Now that these artificial barriers are gone some readjustment will take place.

Wherever one turns there is change. Creditor nations

have become debtor nations, and vice versa. New resources have been discovered and developed. Supplies and reserve stocks have been gauged as never before. Costs have been analyzed; prices have been set; production has been stimulated; consumption has been rationed. Knowledge and experience have vastly increased. The new era is one of greater knowledge, of deeper experience, and of broader outlook.

Coöperation and Coördination. One of the great lessons which we have learned from the recent emergency is the value of coöperation for a common purpose and the coördination of all activity to attain this common purpose. A part of the new era for the world will be the experience derived from the great pooling of interests among the allied people by putting under one control the purchasing power for foodstuffs. When England and France and Italy are willing to submit these elemental demands to the judgment and will of a foreign commerce, a great change in world attitude has arrived. When, also, for the meeting of a common danger armies of allied peoples fight together, even intermingled, the experience of coöperation, of coördinating all the parts of a vast and complex military organization, is a training that is unusual and that will bring radical changes. The people of the United States are sharing in these unusual experiences. But not only is there this coöperation and coördination between nations, but also within the nation there is the same tendency. Great strides have been made in the United States, for example, to mobilize industry and labor and trade for a common end. Never before have so many business men, trained in the school of individualism that has characterized American business in the past, willingly accepted outside control over their own business as has been the case

during the crisis. The effects of this experience seem likely to be of a lasting character.

Use of Scientific Knowledge. Another new experience has been a greatly increased use of scientific knowledge for immediate, practical aims. Many laboratories that formerly were set apart from the actual business world, as a place where truth was sought for truth's own sake, have become veritable workshops. In mechanics, physics, chemistry, geology, biology, and psychology, skilled scientists have been feverishly eager to apply their knowledge to difficult, practical problems.

The lack of coöperation between science and industry has been one of our greatest defects. There are signs of a great change here, however. Nowhere has the change been more marked than in chemistry. Nitro-starch has been obtained from corn; coal-tar products have laid the foundation of a great dye industry; the sulphuric-acid output was doubled; the supply of nitric acid was increased tenfold. (*The Nation*, December 18, 1918.) Only the trained chemists are now wanting for gathering the fruits of this knowledge.

Furthermore, men are to-day, as never before, thinking scientifically in terms of practical policies, and they are really thinking carefully and earnestly. The trained mind is to-day much more in demand than in the past in all lines of endeavor. The effect of this new experience, also, will not soon pass away. There is a growing respect for the power of thinking logically and clearly on practical matters. The specialist is now getting his chance. The tendency in modern education that has been going on for the past quarter of a century is now being put to a test. Specialization in education was justified in theory because it allowed a more complete mastery of certain well-defined

fields of knowledge. This kind of education must to-day justify itself by results.

This new experience applies to all phases of activity. Men are thinking about moral questions and political questions as well as about the practical affairs of life. They are trying to look farther ahead and are looking with greater concern than heretofore. There is more inquiry into the meaning of things; a greater desire to understand the forces that are at work. The same attitude is to be found among business men. They, too, are becoming more thoughtful, more philosophical. This new attitude may not bring them immediate results; but through the years its accumulative effect will be inestimable.

Business Duties. In all this turmoil and stress, in spite of lack of insight and foresight, there is a general belief that business must "carry on." The business man feels a sense of duty to others as well as to himself, that on him is laid the necessity for keeping the business machinery moving. He understands that new adjustments must be made because there are new problems to meet. He feels, too, that business must become more flexible, more unified, more intelligently directed than it has been in the past. He has seen clearly the immediate need for industry and labor coöperation. He indorsed cordially the movement for commercial economy.

All of this meant for him an immediate greater control, more external direction and a more intelligent guidance of business activities. Under changes of this kind the business man must become thoughtful and studious. He needs to be of broader gauge; he needs to study business intelligently. The times that are ahead,—that cannot be foreseen or even judged confidently beforehand,—are certain to be hard times for him who is unprepared.

Out of this experience for the business man should come a great lesson of what may be called the use of thought in business relations. The new business should be a more intelligent business. Have we not in the past been deceived by substituting activity for brain power? Have we not given ourselves to aggressiveness of physical activity, rather than of the mind? Has there not been too much tendency to speed rather than to accuracy? Has not American business in military terms been more interested in rapid fire than in accurate fire? It is about such questions as these that the business man needs to be thinking to-day. However much slack there has been in the application of physical energy to business enterprise, there has certainly been a greater margin on intelligent activity. Where this is the case, it is inevitable that shortsightedness and exploitation should characterize business habits.

After-the-War Trade. There is a great deal being written to-day about the "war after the war." This means that after the conflict with armies there arises the conflict in trade. Nations have organized, even under the stress of war, as never before, to carry on trade aggressively. There is in Europe a concerted movement for centralized control of all business activities. This will mean a surer, a more direct, and possibly a more intelligent management than has been the case in the past. But of more importance than any type of organization is the fact that machinery is being put in operation for the accumulation of business data. This is not a movement for the study of historical development or of gaining a broader knowledge of world affairs, but it is a gathering of business facts for practical use. This applies both to domestic trade and to foreign trade. It is an evidence of the fact that

thinking is to become a part of this after-the-war trade. In that struggle there will be men trained for definite duties in the same manner that men are trained for military use. There will be coördination in trade and standardization and uniformity of practice, such as has not been seen in the past. The United States is to be a part of this trade struggle, and the business man must be equipped to do his share.

Unsolved Problems. The United States entered this conflict with many vital problems unsolved. Many of these had to do directly with business relationships. In reality we had not made a serious attempt to find a solution for them. We were dilatory, probably because we were ignorant; — they seemed so complex, so difficult to comprehend, that we had not the courage to face them fairly and squarely and admit that a satisfactory solution must be found.

The result has been that in the crisis when difficulties have risen we have not had the data upon which to base decisions. There have been committees appointed for special investigations, surveys have been made hastily because of the great need for immediate action. But such analysis can never be satisfactory. It takes time for the accumulation of sufficient data for the analysis of these facts and for careful thinking about all the different phases of the problem. There is the ever pending labor question, there is also the question of price fixing, there is the question of nonessential activities. We must reach some decision in regard to these things. The great regret is that we have not accumulated in the years of opportunity enough data for judging these problems fairly.

Facts and Experiences to Be Utilized. However unprepared the business man was before to meet these difficulties

it now becomes a duty, and there is now the opportunity to see that our experiences are made use of. The facts that come to hand should not be lost. We must see that our mistakes, our sacrifices and suffering do not come to naught. Too often our investigations are like a stream that loses itself by sinking into the porous soil. They are a mere expediency; they get nowhere. Old channels of trade have been blocked and new channels are being forced open. There is revealed to us a disjointed business organization. However distressing the situation is for individual business, the time nevertheless affords an unusual opportunity for study. Just as the scientist may put a cross section of the plant stem under the microscope, so to-day the student of business affairs may see a cross section of business activities. If proper use of these experiences and of the facts that are being gathered is made, it should be possible to start the new era more nearly right. There is here a great duty for the business man.

Old Calculations Invalid. Due to the many significant changes during recent years, the business man, whether he desires to do so or not, must make new calculations. His markets are no longer as they were, and if he is to manage his business intelligently he must discover in what ways these changes have been made. Farm products have had a period of unprecedented high prices. Raw materials of all sorts have found an insatiable market. Old silver mines, over whose doorways the spider has had ample opportunity to weave its web, are reopened. Urgent, effective demand has touched with its magic wand many a stolid-looking rock and streams of profit have flowed from them.

There will be an inevitable reaction. Whether or not business will return to its old lines of activity, the future

only can reveal. Probably some habits will need to be changed even against our will. We must admit that we have had a kind of crass conceit and a smug egotism in business that has led us to think ourselves superior in many respects to the rest of the world. This has been our provincialism. It now stands a good chance of being dissolved in the crucible of international responsibilities; and here again new calculations must be made.

Since calculations must be made anew, then, there is no better time than this to begin aright. Foundations should now be laid for a broad survey of business conditions. In so far as possible, this analysis should be carried on along scientific lines so that the results will be dependable. Numerous war organizations in Washington have been amassing data of prime importance to business men. The result of these labors should not be permitted to be lost, for they can be of great assistance in business readjustments.

Industrial Research. In the field of production a movement is already under headway for industrial research. This has meant the application of scientific principles to the problems of production. Out of it there is arising a new science called the science of management. It has not yet gathered a great volume of facts, nor has it developed fully its working principles. The aim in view, however, has been clearly defined. It is to plan intelligently all the activities that have to do with a business concern. "Scientific Management, in its broadest aspect, is not merely labor-saving management; it is not even shop management; it is industrial management by the scientific method. It is not limited to cost and production, but extends to methods of distributing and marketing the product, to meeting the changes in character of fashion of the product, to questions of concentration, of expansion, of reloca-

tion, of finance, etc. Its most prominent element is a mental attitude, and its result, which will come gradually within the next twenty years, is nothing less than an industrial revolution, comparable with that which occurred when the factory system took the place of the domestic workshop, and when the locomotive supplanted the stage-coach." (William Kent, "Investigating Industry," p. 5.)

This movement is now in great need of leaders. It takes time to train the leaders of a complex movement of this kind. It is a matter of self-education, and education of any kind is necessarily a slow process. Sound progress may be made slowly, but industrial research will continue to gain momentum. In order to show the scope of the movement the following definition is given: "The foundation of Scientific Management is scientific investigation, and by scientific investigation of an industry we mean the critical observation, accurate description, analysis, and classification of all industry and business phenomena relating to the industry, systematic recording and applying of data, drawing conclusions from them, predicting future progress under existing conditions and under proposed changed conditions." (*Ibid.*, p. 11.)

Those who lead in this great movement for industrial research are styled "industrial engineers." Their training has largely been a technical engineering training, but to this technical work they have added usually a broad view of economic problems and principles. To these men has been given the task of constructing a set of workable principles for the guidance of production managers. They have taken up in a scientific manner such questions as the location of plants, the construction and equipment of factories, the processing of materials, and that most difficult of all subjects, the labor problem, with its time

and motion study, and bonus plans. Material is being accumulated on these topics, and is being analyzed in a scientific manner. It will be seen, therefore, that the broad program stated above has so far been carried out only in part. One large field of research has as yet been practically untouched. This is the domain of buying and selling.

Commercial Research. It is now proposed to carry this same attitude of scientific research into the field of commercial organization. What the industrial engineers are doing for production, research experts must begin to do for other phases of business problems. The scientific attitude is to include all business activities. A program of this sort means that the attitude of research, of careful, scientific analysis, is to be held by the merchant and is to be carried by the manufacturer over into his sales department.

This task is a most difficult one. The problems in commercial research are never simple,—nor are they ever stable. Most of them are complicated by that intangible and uncontrollable factor called the personal equation. Commercial research, therefore, calls for a clear mind and patience and zeal in the study of details. “Scientific research in marketing is evidently not an easy task, especially if scientific be given the strict definition that it has in production. Of the importance of the subject of marketing, however, there can be no question, as a few facts will show. Forty per cent. of the price paid by the ultimate consumer for a pair of shoes is consumed in getting the shoes to him from the manufacturer, exclusive of the manufacturer’s profit; that is, in marketing them. For less staple commodities this percentage is yet higher, and

even on so staple a commodity as groceries the marketing margin ranges from twenty-five to forty per cent. The idea is not that this margin is either proper or improper, but simply that it is a pregnant subject to investigate." (S. O. Martin, "Scientific Study of Marketing," *The Annals*, May, 1915.)

The undertaking of this great task of commercial research means a far greater mental effort on the part of the merchant. He must take up problems from a new point of view. Many men in business are extremely shy of figures; the simplest arithmetical or algebraic calculation perplexes and baffles them. Problems clothed in figures are to most men a thing in a book, to be studied quite apart from practical affairs. The drawing of a simple chart, also, is to many a mysterious process, and the use of maps seems beyond the capacity of most. Nevertheless, mathematics in its simplest form can make a notable contribution to business management. It is hoped that the day is not far distant when it will no longer be necessary to apologize for figures.

It will appear at once that commercial research goes far beyond mere figures. It looks also keenly and critically at the setting or framework of those figures. It considers the physical and psychological surroundings. Indeed, many of the most vital things in a business survey cannot be tabulated. But the actuarial tables that have been constructed by insurance companies have shown conclusively that such definite, scientific and wholly reliable estimates can be made. Such tables include many variables, but they have become well founded because the scope of investigation has been broad enough. There is no reason, therefore, why business research in the realm of buying

and selling should not make as great contributions as other kinds of research. This very difficulty is the stimulating intellectual challenge.

Commercial research does not plan to stand alone. Its aim, rather, is to supplement and complete industrial research. One of the primary problems of industrial research has been to analyze a definite task into its component parts in order that it may be more fully understood and in order that the worker may be fitted more intelligently and harmoniously into his task. The same ideal is held by commercial research. How far it may be carried is still a question. "What specialization and standardization are possible in marketing? How far can the experience of one section be applied to the method of another? How much of the marketing problem is human and how much of this human factor is determinable and measurable? Must marketing always have its practice guided by general data, averages, modes, proportions,—mass phenomena? What reorganization is desirable and possible in the present system of marketing, or in a new system developing? These are absorbing questions. Society has permitted large margins for a marketing cost and now society is investigating to see how this margin is used. There is a tremendous field for research. The potentialities are hard to overestimate." (S. O. Martin, "Scientific Study of Marketing," *The Annals*, May, 1915.)

Purpose. The purpose of this discussion, then, is to examine this task of commercial research. There is evidently a long process yet to go through in assembling sufficient data for sound, general conclusions. It is very much worth while, however, to begin this work systematically and under some sort of guidance in order that it may

be done with the greatest degree of dispatch and intelligence. The rules of the game need to be stated, even at the beginning. It is proposed here to undertake a comprehensive statement of these rules. The main points to consider are, of course, what to look for, how to get it, how to analyze it, and how to interpret it. These general points are to be discussed with the firm faith that a fuller knowledge should lead to better business practice.

In the beginning it is necessary for any intelligent study to use the best material and methods available. It is inevitable that these methods should be crude and the material of uncertain value, but both will undoubtedly improve with progress. In this new work, also, the business man must largely educate himself. He no longer has the time or opportunity to take up a formal educational course, nor is this necessary. The hope is confidently held that a clear statement of the problem of research and a careful examination of ways and means should prove suggestive and helpful.

The Plan. The discussion that is to follow has been carried out with a definite plan in view. There may be some question as to the logical arrangement of material, but in general the attempt has been made to follow a natural process of scientific investigation. The various steps in this process will here be indicated.

1. *The Need for Research.* Many business men are just awakening to the need for more careful methods. Many trade associations and government officials are urging a uniform system of accounting, and particularly that the items of cost may be identified and recorded. All of these things work for better business, which is the ideal of commercial research. The progress along these lines means greater knowledge from year to year,—a greater

knowledge of facts and of how to use them. This is the essential element in the business of the future, which has here been called the new business. The progressive merchant must join in this movement. "It was found that forty per cent of the battalion held back the whole number three seconds in jumping the trench, thus bringing them all under machine-gun fire and doubling the casualty." (*The New Republic*, June 22, 1918, p. 229.) It is that costly three-second error in business that research aims and needs to eliminate.

2. *Character of Commercial Research.* Commercial research means the making of a careful and comprehensive analysis of business facts. In general it may be called a study of business data by careful and comprehensive methods for the purpose of establishing rules of action, of discovering the best commercial practice, and of formulating sound business policies. It is the applying of scientific principles to practical business problems. Such a movement as this must be rooted deep in an attitude of mind which may be characterized as one that is thoughtful, logical, clear, and patient in seeking for facts. There is no easier way to a better knowledge of business. Hard mental effort, a course of sustained reasoning, a keen sense of relative values, an untiring energy to get all the facts, a relentless will to pursue the investigation to a satisfactory conclusion, a sympathetic knowledge of human relationships, a real and honest desire to know the truth, however uncomfortable it may be, a constantly open mind, are all parts of commercial research. Business is, of course, always carried on for profit; it is essentially selfish and must continue so. Nevertheless, business does not need to be justified; it is essential. But more intelligent business is better business and is much to be desired.

3. *Sources of Business Facts.* There is a practical need to know where to look for material. It can be demonstrated that many business facts are already available to the merchant or manufacturer. The only obstacle to their use is a knowledge of their presence. One's own records are a perennial source of first-hand data. Libraries, for instance, public and private, can be used much more extensively by the practical business man. The government has made available a great mass of data for any one who desires to use them. There are, also, countless publications containing material of practical benefit. Other facts may be secured by a direct inquiry either by mail or through personal investigators. A constant source of material is the personal observations of the business man himself. Some attention to the problem of research would give a training in observation that should prove of very great value.

4. *Nature of Business Facts.* To work intelligently one must know how to recognize the significance of the material with which he deals. Fortunes have been made by the tardy discovery of the value of discarded by-products. It is said jocosely that to-day all of the pig is utilized by the great packing houses except the squeal. If the business man is to make a thorough and intelligent use of the information available he must inquire into the nature of business facts. The facts sought by one engaged in commercial research are, of course, those that are pertinent and essential to the solution of the problems at hand. Inquiry, therefore, is to be made as to what form these facts assume, as to what changes they may undergo, as to how their significance may be determined.

The character of each individual problem will inevitably affect the data to be studied. What is most significant for

the manufacturer may be incidental for the wholesaler or retailer. The producer may interpret everything into terms of "cost"; the distributor may translate his facts into terms of "value." For "style goods" certain considerations are of primary importance; for "novelties" the case may be different, and "staples" may run on another basis. Always, however, business facts are a means to an end and not a goal in themselves. Facts from whatever source, of whatever character, are the working materials of business research in all its phases.

5. *Method of Collecting Facts.* Another inquiry is how to get the facts. If they are all about one, how may they be assembled in an economical and intelligent fashion? Business research to be of great benefit must go far beyond the experience and observation of the individual. One may write for it by means of a letter of inquiry or one may frame a schedule and send out personal investigators. From one's own business there can come the essential internal facts which may be made available through a practical filing system. Various ways and means of collecting essential data are taken up in this discussion.

6. *Analysis of Business Facts.* Another step in the process of business research is careful analysis. This means a classification of the data that have been collected. It means an arrangement of this material according to some logical principle. Facts must be put in shape for presentation. It is in this branch of the work that the science of statistics can be very helpful. The business man needs to know how to use these statistical methods in his own problems. A large number of them are simple in character and easy to use. By means of them one may be able to reduce a great mass of heterogeneous facts to a

simple, clear, and understandable summary. Always the analysis must be carried on for a definite purpose.

7. *Presentation of Business Facts.* Another part of scientific research has to do with methods of presentation. A study of this kind may be developed into an art, and is, in fact, in this process to-day. It is the application of artistic skill to utilitarian purposes. There are, however, simple devices and elementary principles which may readily be used by the average man without special skill or special training.

The chief aim sought by methods of presentation in commercial research is to clarify the facts for some one who is to use them. It is rare that a business problem is simple in character, or that the most significant items are apparent at a glance, or that the entire situation can be readily visualized. If these facts are to serve as the basis for judgment, if they are to be translated into a course of action, the manager before whom they are to come and who is a busy man, must be able to comprehend them quickly.

The process of collection and classification must have preceded the entire problem of presentation. Much of the preliminary work will, in fact, have been done in making the facts intelligible. Nevertheless, the process of fitting the data into some device for presenting them clearly and vividly is necessary. The methods of presentation take numerous forms, such as reports, briefs, charts, graphs, maps, tables, and so on. How and when to use these is discussed in non-technical terms.

8. *Interpretation of Business Facts.* The culmination of the research process is in the interpretation of the data that have been collected and analyzed. The goal of com-

mercial investigation is to translate business facts into terms of business practice and policy. The progressive business man refuses to be deceived or to remain ignorant. He is anxious that his business may be carried on with more intelligence and with a higher degree of managerial skill. In order that this aim may be accomplished, he needs to translate his knowledge into terms of business management. This is the last step in the process of business investigation. It is likewise the critical and crucial moment. Certain tests of validity and certain methods of checking up have been indicated. There is nothing here, however, that can displace an actual common-sense judgment.

9. *Organization for Research.* Certain devices and machinery are necessary for carrying on the work of research. The character of this equipment will depend upon whether the business man organizes his own research department, whether he uses the advertising agency, or whether he seeks the special services of a research company. In any case the same principles of organization and the same equipment are required. In order that work of this kind may be done with a near approach to scientific precision, there is need for training on the part of the individual in charge of the work. Some discussion is given of the character of this training and of the equipment necessary for satisfactory investigation.

10. *Some Fundamental Principles of Business Analysis.* When a sufficient body of knowledge on commercial problems has been gathered and analyzed there will develop a set of general principles that may be applied to any problem of any business. These are fundamental business principles. They can only be the result of extensive commercial research. A survey of the character of these fun-

damental principles will be made in order that there may be suggested lines of inquiry and methods of research. These principles, also, will have a relation to business policies which result from a fuller knowledge of business facts. They will aid one in determining what is just and fair in business practice. The beginning of business faith should be a belief in the truth of the statement that a better knowledge of business facts will inevitably result in better business practice and better business policy.

11. *The New Business.* All research work looks to the future. In doing so, it must turn prophet and attempt to anticipate the changes that are coming. This future is to be judged most accurately from past experience and from present tendencies. The progressive business man desires to be prepared to meet the changes which will affect his own business. If he has the attitude of mind necessary for commercial research, he will also want to know where he belongs in the new scheme of things. It is desired, also, that there may be a greater interest in business problems, a better spirit in business practice, and that the work of the business man may be made much more than mere routine and guesswork.

The Material. The subject matter of this discussion is almost entirely non-technical. It has been necessary to use some of the terminology of the science of statistics, but in every case these terms have been carefully defined in non-technical language. The material for illustration has been taken from business affairs. The principles that are developed are also translated into business terms. It is not claimed that this kind of material,—the real factual material from business affairs,—makes the discussion any better or any worse. The aim has been, only, that what is said may be fully understood. The book is written for

the average business man and a reasonable amount of intelligence is assumed. Interest in business problems is also taken for granted.

The subject matter here is intended especially for the man who wants to know more about his own affairs, both in detail and in its broader aspects. The substance, therefore, is to be compared with the apparatus for research in physical and chemical sciences. It is intended for the study of business problems. If it attains this purpose, if it is of practical value, it should be an aid to every one. The advertiser, for instance, is coming more and more to need the equipment for business research. He is developing into a new type of business adviser. For the newer specialists in business investigation, the business research and development companies, there should be much here of interest and of practical use.

There is not in this discussion much preaching to the business man. He can get enough of this from other sources. This material is for service and not for accusation. It is intended for education and especially for the self-education of those already in the midst of the game. Nothing more is claimed for it than practical suggestiveness.

The Method. There is to be found here a discussion of principles and not of historical development. Descriptive material there is in abundance, but only for illustrative purposes. An attempt has been made to follow a natural process in thinking, the obvious method of taking a problem apart in order to understand it thoroughly. When one is first convinced of the need to do a thing, his next inquiry is into its character and the methods for doing it. Such is the underlying principle here. Wherever possible the various discussions have culminated in a definite state-

ment of the principles involved. Much elementary knowledge, of course, is assumed on the part of the reader. Among these elements experience and power of observation certainly belong. The appeal is emphatically intellectual, in the belief that such emphasis has heretofore been wanting in business writing. The statements of fact and principle are made as direct and as non-technical as possible.

The Point of View. The point of view in this discussion is frankly practical and consciously impersonal. It is written for the business man; for his use and not for his entertainment. In all cases where it has been possible, the problems involved have been brought to a practical, suggestive issue. Rules will be found here of such sort that they may be actually followed in daily practice.

It is hoped that sincerity, also, is an obvious characteristic of what has been written. Underlying it all, there is a belief and a faith in the real value of business, in its fundamental soundness. The necessity of business activities is, of course, assumed. There is no form of organization or definite system that is criticized or commended. The point of view is not a social one. There is no question here of social welfare in the usual sense of that term. This does not mean that such problems are not of prime importance, but only that they do not come within the range of this discussion. There is, nevertheless, a certain recognition of ethical and moral problems. It is always possible to have a clear consciousness of the existence of such questions without presuming to discuss them.

There is to be found here, too, an ideal of a better business, probably a more satisfactory business, that may be gained through a more thorough knowledge. It is believed that in business, as elsewhere, the truth will make men free,—free from bad practices, free from hidebound

tradition, free from narrow selfishness, free from wasteful methods, free from unfair competition. While there is this well-grounded belief in knowledge, there is no self-deception in believing that a great mass of business men can quickly gain such knowledge. Education is a slow, patient process of intellectual development. Only the most terrible experiences can quickly change the main course of our lives. This is certainly true in business activity. Through the course of American history it can be found that old, obsolete customs have persisted in spite of all changes. There is every reason to believe that such will continue to be the case.

Business relations of one kind or another permeate all activities. The great European struggle, for instance, is called an economic struggle. Economic interest, business considerations run like a purple thread through the fabric of all democratic institutions. It may be that even democracy will find a surer basis with an increase of business knowledge. Certainly in the making of the laws that control us, there is need of a fuller understanding of business affairs. In most disputes that arise there is need of a broad knowledge for fair settlements. It is even advocated to-day by some that a study of business has a great cultural value. There is apparent a tendency for practical business courses to engage a larger and larger attention in schools and colleges.

Whatever is the real truth in regard to these questions, this discussion is openly practical. But on the other hand it is not meant to be crassly materialistic. There is meant to be found in it an element of idealism; nothing will be found here either about old or about new "tricks of the trade." Unfortunately for business writing such things have occupied too much space in discussing business prob-

lems. On the other hand, there is no attempt to seek truth merely for truth's own sake; but it is sought for the purpose of establishing good business. Scientific research of every kind is a search for truth, however practical this truth may prove to be. Nor is there anything presented here intended for the purpose of exploitation, although much is said about success. There is nothing of get-rich-quick methods, but much of profits. In general, business is looked at in a practical and impersonal way as a real man's job,—one that should be done worthily. It is for this reason that there is not in this discussion much sentiment, though there is strong conviction. This book is written, on the whole, for those who are willing to accept this general point of view.

CHAPTER II

THE NEED FOR COMMERCIAL RESEARCH

Native business ability — A new element in business — A business problem — Evidence of lack of knowledge — Business cycles — Mal-adjustment in business — New business forces — Business research in foreign countries — Research in the United States — A research bureau — Educational value of research — Conclusion.

There is everywhere a growing demand for a better knowledge of business principles. In the future commercial competition, the present rule-of-thumb, hit-or-miss, trial-and-error methods will not suffice. Business must become more nearly like an exact science; business facts must be organized on a sound, safe, dependable basis. Practical affairs need more theory, and the practical man needs must be more thoroughly grounded in abstract principles. But a science can be built up only by men who are free from the daily grind of routine, free from the ever-pressing burden of management, free from the multitudinous details of immediate direction. This is the field of commercial research. In fact, the call of to-day is the call for business research, the abstracting of the real problems of real business for the purpose of careful, uninterrupted, scientific analysis.

Native Business Ability. Hitherto there has been a kind of native shrewdness that has served in place of carefully organized business knowledge. This shrewdness was based upon years of experience, a natural ability to observe the ways and reactions of people, an intimate interest

in men and their affairs, together with an abundance of common sense. This combination of qualities has been called native business ability. It was this ability, too, which was supposed to fit a man for any kind of enterprise. It dispensed very largely with the need for formal education; it was to be distinguished from theory taught by schools as being an attribute of a practical business man.

There are, to be sure, many examples of men who have made notable success by their use of native business ability. This has been due, in part, to the fact that the United States was a new country with vast undeveloped resources and unlimited opportunities. The outlook for the future, however, is far different. Competition in most lines grows keener from year to year. The self-made business man belongs to the nineteenth and not to the twentieth century. There will doubtless continue to be loose methods in business; too many business managers will continue to rely upon their ability to "size up" a situation rather than to analyze that situation on a basis of fact and determine a sound, farseeing policy from the results of the analysis. It will become ever more difficult to carry on a business by such unscientific methods.

In rural districts, for example, where live stock is produced, there are buyers who go to and fro through the countryside and purchase the stock from the farmers and collect it in carload lots. These buyers are usually men of experience and of such shrewdness in judgment and offhand calculation that they are able to guess the weight of hogs and cattle, even in droves of ten or fifteen. It is the habit of these buyers at times to buy a drove of hogs, for instance, at their guess weight. Frequently it happens that when this guess is tested by the scales it proves to be reasonably accurate. In our great railroad organ-

izations, even, there used to be — and the generation may not be wholly passed — a group of men, the traffic managers, who had developed an extraordinary ability to judge the rate which should be set for carrying various commodities. This ability was generally known as the intuition of the traffic manager. Sometimes it was right; often it was wrong. It used to be said of the marine insurance companies that in setting their insurance rates, they first looked at the goods, then at the ship which was to carry them, then up to heaven — and set their rates. It was once the custom also for retailers in rural stores to measure off the cloth, as they sold it, on their arms without the use of the measuring stick. Methods of this sort were found everywhere, but they were crude and inaccurate.

Generally, the man who was most successful under such a system was he who developed some method of his own to reduce to a minimum the common inaccuracies in calculation. The man who guesses most surely under such a system as this is the man with a natural gift for business. It is generally said of him that “he has a head for business.” This may mean also that he can see business opportunities and has sufficient daring and nerve to take advantage of them. All of these are undoubtedly good qualities to have. They have brought success to many a business man. It cannot be denied, however, that even the most successful of these men would have done better still with better methods. The use of accurate scales and of the yardstick has saved to society untold waste.

Superior ability in guessing, or in knowing by intuition, is generally the result of native ability trained and disciplined by experience. The expert stock buyers at the great packing centers have only refined upon the method of

the country buyers. Men on the grain exchanges who grade wheat and corn by government standards have only carried to a greater degree of perfection the methods of the country grain buyer. The progressive marine insurance companies have continued to look at the goods and at the ship which is to carry them, but they have looked with a far greater degree of intelligence than formerly. The traffic managers of the railroads under the wise guidance of the Interstate Commerce Commission are "scrapping" their intuition and are adopting scientific principles for rate making. This change from simple, crude, and inaccurate methods to the application of well-founded principles is becoming a characteristic of American business to-day.

It is not claimed that a course in formal education is necessary for business success. Some men have the capacity to work out a set of principles for themselves to guide them in their business activities. They benefit by their own failures and successes, and by the experience of other men around them. Although these principles may never be definitely phrased, or even clearly perceived by these business men themselves, they are yet able to apply certain standards of conduct to their own business problems. The experiences of such men, however, may be lost to a new generation unless in some way they are conserved and made available for a new group of business managers. This transmission of business principles cannot be done successfully by a series of letters from a self-made merchant to his son or by the informal training given in the business itself. There is great need that business experience be recorded and be analyzed for the promotion of commercial analysis. This is the new duty in business to-day.

A New Element in Business. The day of shrewd guesses in business is fast drawing to a close. The urgent demand now is for facts which have been carefully collected and scientifically analyzed, and which afford to the new business manager a solid basis for preparing his plan and administering his work. This means that the old rule-of-thumb methods must be discarded and that an approach, at least, to scientific analysis must be made. This means, also, that there is to be no longer the disparaging comparisons between the practical and the theoretical business man. Theories, if correct, are, after all, only principles which are to be applied.

He is certainly an impractical business manager whose accounting system is so inaccurate that he does not know his own costs. It must also be a proof of the impractical character of the general retailer that most of the retail associations are organizing educational departments. Even the National Credit Men's Association finds it necessary to educate the retailer. This can only mean that the so-called practical business man is found to need more instruction in the theory of business. Theories, however, that are safe to apply must develop out of a great mass of facts. It is the duty of commercial research to accumulate these facts.

In the field of production something has already been done toward applying scientific principles to business activities. The whole movement for scientific management has placed an emphasis upon a careful and detailed analysis of each production problem. Increase of output, elimination of waste motion, reduction of cost have been the chief aims in view. It has been long since realized, however, that scientific analysis could not stop with the productive process. The whole field of business must be its

realm. As yet, on the marketing side, the movement has made but little progress. There are, of course, good reasons for this being true.

In the first place, it was a far easier matter, though in itself difficult, to isolate and define the problems of production because they are largely internal problems; that is, they are confined within the four walls of the factory. In large part, also these problems have to do with inanimate objects, with crude, lifeless, inert materials that are to be reshaped. Control over these can be practically absolute. In so far as these problems can be isolated from outside influences they are analogous to experiments in chemical, physical, or biological laboratories. In marketing, on the other hand, there are many intangible and uncontrollable factors. Only recently have business men begun to realize the value of psychology, yet this is only one field into which they need to enter. The commercial phase of business is an exceedingly complex affair. The merchant has no single or simple duty; he has a great bundle of relationships of many kinds. He has to deal with people whom he meets as equals, over whom he has no direct control, as well as with the inert goods on his shelves and the sales force. Every merchant, every manufacturer who has materials or services to sell, has always two great problems; one a problem of internal management, and the other the external problem of securing customers. Both of these are intricate and complex.

A Business Problem. As an example of the character of the business man's problem, take the management of a mercantile warehouse. It would seem to be a relatively simple affair; it is not so. There may come into this warehouse all sorts and conditions of goods. They may be salt, tobacco, gloves, tea, leather, machinery, jewels, and

merchandise of every kind. It is the primary duty of this warehouse man to return all commodities in as good condition as he received them. *Some of them, however, are perishable and will deteriorate very easily. Many of them cannot be placed together in the same compartment.* There is also the question of the quantity of light which is to be permitted to enter; there is the question of humidity of the atmosphere; there is the question of temperature. There is also the problem of keeping records in order that at an instant's notice the manager may report the amount of goods on hand, the character of the goods, by whom sent, and to whom they are to be delivered. He must know, also, the space that is available for storage at all times. He must establish connections so that the goods will come to him for safe-keeping, and he must be ready to accommodate the merchant who may ask for them at any time, and in any quantity. For all these services it is also his duty to set a rate of charge. He must study his business in its broader aspects as to what forces are at work to increase or decrease his usefulness,—where he belongs in the scheme of things. This warehouse man, therefore, to meet all his problems, must know something of the physical and chemical sciences, something of mechanical engineering, something of accounting, something of labor management, and in addition he must be a merchant of his services. If he chances to be in charge of a cold-storage warehouse, his technical knowledge must be greatly increased. This will serve to illustrate the complex character even of the business man's simple problem and will show how difficult a task it is to apply the principles of research to such problems.

There have been notable examples in recent years of men with technical engineering training who have proved

to be extraordinarily good business men. Some of these may have been exceptional cases. There are, however, certain reasons which might tend to explain their notable success. An engineer is a man who has been educated to apply his knowledge of principles to the concrete problems at hand. It has also been a part of his education to reduce these problems to an exact and simple statement. He has been trained to express abstract ideas in mathematical formulæ so as to reveal clearly and definitely their relationships. It may be that this kind of education has given him an ability to apply abstract economic principles to business problems.

A scientific study of business, after all, is little more than a thorough understanding of business. This understanding must include a mastery of the underlying principles, together with the reason for, and method of, applying them. The aim in scientific research is not only to identify the principles involved, but also to enable the investigator to gain a mastery over these principles. A knowledge of facts is very largely worthless until that knowledge has been transformed into the workable wisdom of policy and of practice. Scientific principles in business, as elsewhere, are of no value unless they are usable. Commercial research has for its aim, first, to accumulate facts and, second, to deduce from these facts certain principles which may be applied to the solving of business problems.

Evidence of Lack of Knowledge. Business men to-day need to know not only more about their own business, how to keep careful, accurate records of costs, how to buy and how to sell, and what business policies to establish, but they also need to know more about business in general. There are many important problems that are still unsolved and which can be solved only by a fuller and broader

knowledge. Heretofore, the last appeal of the business man who cannot understand why his competitor does business more successfully than he does, was to the law courts. He called upon the government to handicap his competitor, in order that he might carry on business in his own wasteful way. This is, of course, a shortsighted and unwise policy. The only means to rid ourselves of it is to know more about business. The general business man is altogether too narrow in his outlook. His policies are too selfish and too shortsighted. Any business that is worth while should be founded for permanency. The day of "get-rich-quick" methods is almost gone. Some big fundamental problems loom just ahead which the business men of to-day and to-morrow must solve.

There has been in American business a generally accepted principle that competition is necessary for the best type of business. We have gone so far in this matter as to pass laws which enforce the application of the principle to business generally. We are committed to "enforced competition," and yet the ideas of many men on this subject are changing. Evidence of this fact appears on every hand. Even before the Supreme Court of the United States passed judgment on the Standard Oil Company and the American Tobacco Company in 1911, and developed in their decisions what has since been known as "the rule of reason," the attitude of many men toward big business had been greatly modified. One of our Presidents even divided the much abused trusts into those that were good and those that were bad. This change has gone so far that the Federal legislature in April, 1918, passed a law specifically permitting combinations to carry on export trade. It is now possible for large concerns and small to organize a single centralized selling company to

handle their products whether these businesses are competitors or not.

But even to-day, under the strict laws that compel competition of all kinds in domestic trade, we do not know for a certainty that the principle is sound. We have no sure knowledge of the general effect of large-scale business. Some maintain that the savings of large combinations are all mythical. Others hold that, uncurbed, these businesses will dominate in the country more and more. For a solution of this difficult problem there is need of more facts. We do not to-day know enough to decide this matter.

There is another very important question which concerns American business practice. This is the question of fixed or maintained price. Shall the manufacturer who has identified and branded his goods and who has advertised them nationally have the right to stipulate at what prices they shall be resold by the jobber and the retailer? To this query there is a divided answer. On both sides there are many strong arguments. Such a question, however, can receive a satisfactory answer only when the full effects of the practice are known. These consequences cannot be known until more facts are secured. In order to secure these facts a wide and careful research is needed.

Another phase of American business, which is of very great importance to-day, is the question of unfair methods in business practice. What is an unfair method? No one can answer this in an authoritative manner. The courts, high and low, have not yet agreed upon any legal definition of unfair business methods. The Federal Trade Commission has not yet reached any conclusive decision. Business men have different opinions on the subject. It would appear that the only safe answer can be made on the basis of the results which follow from certain methods.

After all, a method can be called fair or unfair only as it works out fairly or unfairly in actual practice. The facts are still waiting to show whether practices work out fairly or unfairly. These facts can be secured only by a broad and careful research. No valid conclusion can be drawn from single instances. A wide prospect only can reduce individual experience to its proper perspective.

Economists have long called attention to the fact that there is a great need for a better adjustment of production to consumption. To-day it is said that business as a whole has no plan. This means that there is no general scheme for adjusting the productive plans to meet the changes in demand. Within a plant or within a store there is, of course, generally speaking, a sufficiently clear plan of processing materials, of buying and selling. The manufacturer makes out a definite productive scheme which he is to follow for the coming three, six, or twelve months. He makes his purchases of raw materials to suit this plan. He adjusts his manufacturing processes to turn out the finished product in accordance with this plan. The merchant likewise purchases his goods for the coming season and adjusts his selling plans to carry these goods off his shelves. Within these establishments, then, there is a plan or organized effort, but in society as a whole, within large districts or within national boundaries, there is no one, no group of people, to tell what should be done. This phase of economic activity is said to be chaotic. Planlessness is characteristic of all kinds of production within these larger groups.

Farmers of every neighborhood plant those things which their neighbors have found to be successful, with little regard to the general consequences. It is well known that this often leads to overproduction in certain lines. In the

cities the manufacturers are just as prone to concentrate on certain lines of goods. For years the market could not take care of enough steel products to enable the steel plants to run at more than 65% capacity. The same thing must be true in many other lines. This undesirable characteristic of business can be eliminated only by a more complete knowledge of conditions. This fuller knowledge can be secured only through research. And since it is obvious that the lack of planning in production will be manifested in selling because the sales force must take care of what has been produced, this means that the research which is needed must include commercial research.

Business Cycles. One effect which follows from the lack of planning in production is the recurring periods of panics and depressions. Every period may have its own set of causes, but among these causes will surely appear some form of poor adjustment in production. In fact, some writers have explained the so-called "cycles" on the basis of repeated overproduction. When business is growing better and there comes a return to normal conditions after a depression, the general optimism of the business man carries him beyond the point where demand will absorb the supply of commodities. Along with this overproduction will appear abnormal credit. When some merchant or manufacturer becomes unable to meet the demand of his creditors, those who have granted credit to these creditors will likewise be affected. There is, then, enacted in business the old game of "tenpins" where one knocks the other over until they are all down. If such be the causes of these returning cycles of business, these panics, crises, and depressions, one corrective is surely a fuller knowledge of business conditions. Once more this knowledge lies through research. The kind of research

needed is that which will determine at any given time the limits of demand. This means commercial research.

Maladjustment in Business. Poor adjustment of supply and demand may be of two kinds; one is the individual, and the other is the general lack of adjustment. The individual manufacturer or merchant may make his mistakes in location, in the character of his products, or in the kind of business which he thinks he can do. This means an individual loss. If there are many at the same time who make such mistakes the effects are very naturally far more widespread. The losses are also much greater. There may be, for instance, too many retail stores of a certain type. Sooner or later some one must suffer for this mistake. Or an individual retailer may make an error in judging that a certain locality will justify his locating there. It has been claimed that there are too many retail grocery stores in most cities. Whether this is true or false cannot to-day be demonstrated. One may point to the high mortality rate among the retail grocers, but this condition may be explained in several ways. There is great risk in that particular business. The retail grocer as a type is rarely ever thoroughly trained for that particular branch of business. Both of these things may be elements in the explanation of the large number of grocery stores that go bankrupt. No conclusion, however, can be valid until more facts are known. The securing of more facts is the duty of commercial research.

It would appear, then, that a large part of the poor adjustments might be avoided if those engaged in business knew more about the business conditions in which they worked. This would be true of the individual in the location of his store or of his factory, and through the individual it would reach the entire group. All might thus

be benefited by the knowledge of business conditions which research would secure, for it must be admitted that lack of adjustment is not due to intention. It is a rare instance where a man goes into business knowing that conditions are against him. If it is due to ignorance, and if it is desirable to rid business of this lack of adjustment, then there is a need for commercial research.

New Business Forces. The great disturbances in political and economic affairs caused by the European war will also undoubtedly be reflected in business practices. It is the consensus of opinion that business in general is due to have many radical changes. There will be new commercial relations established, both domestic and foreign. Many men are hoping for a higher plane of international business. Old methods are fast becoming obsolete. There will be need for new methods of doing business to take their place. There is also likely to be a new attitude of mind toward business. Many men are talking already of the profession of business, but American business can never be a profession until there has been established a body of working principles.

It is purely a matter of prophecy to speak of the new phases of business which will result from the war. There is evidence on every hand that business practice may become far more strenuous than in the days that are gone. One chief distinction between American business methods and European business methods is the nervous strain of the American business man. He is restless and eager and drives himself often beyond his power of endurance. His judgments are frequently snap judgments, because he believes in quick, direct action. Business is business with him and personal relationships are of minor importance. It is possible that there may be an interaction between

European methods and American methods so that the American business man may reduce his speed and the European man increase his. It is safe to say at least that business after the war will be of a different sort from business before the war.

Whatever the changes are that the European struggle brings about, one thing is clear. There is need on the part of the business man of a clearer insight and a better knowledge of his relationships. It is only by study and analysis that business can become more nearly a profession. The retailer is only just now awakening to the fact that he has a real definite service to perform to his community. In the past he has thought altogether too much of what he could get without considering what he should give. The business of retailing is a real social service. It should be so recognized by all concerned and so carried on by the business man. A better understanding of coöperative organizations might well hasten the day when this type of business would achieve the success in the United States that it has attained elsewhere. The memorable campaign for free silver in 1896 did much to awaken business men and others to the importance of economic problems; it developed into a great national education movement. The introduction of the trade acceptance may become another important educational factor. In every way the new business will require more study, more analysis, more research.

Business Research in Foreign Countries. Changes are coming not alone in the business of the United States but in other countries as well. Great Britain, which has always been a country of individualism, is now rapidly changing to a country of close coöperation. In the past the British business man has had the responsibility of

making his own way in the domestic market and in the foreign market. He had to find his own buyers and had to educate them to the buying of British goods. This he did with great success. It was the British business man who made the pound sterling known round the world. It was the sound principle and fair dealing of this same British merchant that gave the peculiar meaning to the expression of "sterling worth."

To-day British individualism is being subordinated to British coöperation. The great Board of Trade which in past years was a passive body has now grown aggressive. It has an active research department and an organization that reaches out into the great markets of the world. By this means there was, even in the midst of war, a flood of information on trade conditions pouring back into England and it was being made available for the British manufacturer and merchant. In general, British trade is organized as it never was organized before, for both domestic and foreign trade. Principles of science are rapidly being applied to business problems. It will be a reformed and a reorganized British trade which will go forward after the war conquering and to conquer. This example of what Great Britain is doing should be an inspiration to us.

Long before the European conflict Germany had been applying scientific analysis to business problems. There were research departments in factories and research departments in mercantile establishments. In all the great markets of the world were German agents collecting facts and sending these back to the German merchant and manufacturer. Buying habits, credit risks, character of products, need for machinery, personal connections,—all these were the topics of study and analysis of the German busi-

ness agent. Everywhere he went he became a booster for German trade. German goods were adapted to foreign needs, German methods were adjusted to the whim and fancy and habit of primitive folk.

Even in the midst of this great struggle Germany found time to carry on business research. In the iron and steel industry, for example, a special research institute was planned some time in 1917 "to promote the progress of metallurgy, with a view to the exceedingly keen competition in the world's markets to be anticipated after the war." The plans for this new research institute have been translated as follows:

"The preparatory work will be set on foot at once by the German Iron and Steel Institute and the association will also be afforded subsequently the opportunity of insuring, in conjunction with the administrative committee of the institute and a scientific advisory council, the indispensable cohesion between the iron industry and the new research institute.

"The location of the new foundation has not yet been decided upon and the decision has been left to the German Iron and Steel Institute. But according to the views expressed in this regard at the preliminary meeting the research institute will be located in the Rhenish-Westphalian industrial region. The considerable funds required for the construction and maintenance of this research institute will be provided by the iron and steel industry alone, aside from a small contribution from the Kaiser Wilhelm Society, while the town in which the institute is established will have to undertake to provide, in addition to a subsidy toward the building expenses, the requisite ground for its site and its connection with the railway by a siding, etc. The possibility is not precluded that later other industries engaged in the further elaboration of iron and steel may take a share in the new research institute."—(*Monetary Times of Canada*, May 10, 1918.)

In addition to this research institute there is another

one in Germany that has existed since 1911. This society has assisted in the foundation of an institute for chemical experiments, coal research, study of labor problems, etc. One of the principal aims of the society was to promote foreign trade. With the coming on of the war much of its activity was devoted to the development of scientific and technical aids to warfare. This, however, has not engaged all of its attention. It still has had time to carry out work for the promotion of industry in general. As an indication of the program which this society has set for itself, the following points are quoted from the proceedings of a meeting held in November, 1917:

“What has been will never return; nor would it be desirable. Technical science has been endeavoring to come to the aid of economic life in a threefold manner:

1. By procuring the raw materials formerly obtained from abroad, partly by the establishment of industries which had become unremunerative. (Production of manganese, increase of production of iron, production of sulphur, investigation of agriculture.)

2. By promoting the technical tendency already existing in pre-war times toward increased utilization of waste products. The term “non-utilizable substances” has been eliminated by the war.

3. By producing substitutes such as, for instance, nitrogen from air, and the production of substance by synthetic process where the natural way is no longer available, as for instance, the cattle food produced from straw.”

All of the business research work — technical, industrial, financial, commercial — has now been concentrated under the control of the Imperial Economic Office. Into this organization, like water into a reservoir, flow business facts from the ends of the earth. Here are experts that

have had years of special training, to receive, collate, analyze, and make serviceable these facts. It is a bureau of national business inquiry for national business service.

These are only instances of a general tendency in that country. For many years foreign branch banks have been laboratories for the study of business problems. One great cause of Germany's remarkable growth in foreign trade is undoubtedly just this constant collecting, assembling, and analysis of business facts. In this work they never grow weary. The results obtained even after a few years were such as to repay fully all the painstaking labor required. Such a system as this of Germany should be an example for us.

Interest in business research has awakened in other parts of the world. Japan, for example, has sent her commissions to the ends of the earth for the purpose of studying business conditions. The information thus secured has been made available to the Japanese manufacturer and merchant. As a result Japanese goods have found their way into most of the great markets of the world. She, too, has never wearied in well-doing. If we are to meet her in the competition of the future, we must be able to match her research work.

France, too, has been aroused to the need for business research. She is growing ambitious to increase her foreign trade and feels that her contact with foreign markets is all too tenuous. A plan is already formulated for sending out investigators to study markets and to send back reports on them, and then to make these data available for French manufacturer and merchant. The French consular service is to be improved and greatly increased.

The countries of South America have also become interested in the study of trade problems. There met recently

in the city of Rio de Janeiro, Brazil, a commercial association that took up the matter of extending the commercial relations of Brazil. As a result of this meeting a committee was appointed for the purpose of making a special study to increase and facilitate commercial relations between Brazil and England, France, the United States, Portugal, and Italy. A system of correspondence, also, was established whereby Chambers of Commerce in foreign countries were asked to make inquiries about trade opportunities in Brazil. It was further urged that information be collected at once for the purpose of intensifying domestic production. The program thus analyzed will be carried forward by this commercial association in its future meetings. It is to become in a sense a clearing house of business information for the manufacturers and merchants of Brazil.

In Peru, also, there was recently established a Commercial Information Bureau. The purpose of this bureau is to place the small industries of the country, especially the mining and agricultural industries, in direct communication, both with the markets in which they are to buy their supplies and with the markets in which they are to sell their products. This bureau is planning an extensive library of trade information. It is planning to collect a vast number of periodicals and catalogues from all parts of the world for the instruction of their own business men. If the program is carried out, it will become for that country an industrial and commercial research department.

Research in the United States. These are instances of the new movement in business as it has manifested itself in foreign countries. In the United States we have not been wholly inactive. There was organized in 1916 what is known as the National Research Council under the aus-

pices of the National Academy of Sciences. The duties of this council have been described as follows:

1. In general, to stimulate research in the mathematical, physical, and biological sciences, and the application of these sciences to engineering, agriculture, medicine, and other useful arts, with the object of increasing knowledge, of strengthening the national defense, and of contributing in other ways to the public welfare.

2. To survey the larger possibilities of science, to formulate comprehensive projects of research, and to develop effective means of utilizing the scientific and technical resources of the country for dealing with these projects.

3. To promote coöperation in research, at home and abroad, in order to secure concentration of effort, minimize duplication, and stimulate progress; but in all coöperative undertakings to give encouragement to individual initiative as fundamentally important to the advancement of science.

4. To serve as a means of bringing American and foreign investigators into active coöperation with the scientific and technical services of the War and Navy departments and with those of the civil branches of the government.

5. To direct the attention of scientific and technical investigators to the present importance of military and industrial problems in connection with the war, and to aid in the solution of these problems by organizing specific researches.

6. To gather and collate scientific and technical information, at home and abroad, in coöperation with governmental and other agencies, and to render such information available to duly accredited persons.

In addition to the National Research Council there has been organized in the United States a Research Information Committee whose purpose is to secure, classify, and disseminate scientific, technical, and industrial research information. At present this information is particularly related to the war problems. There are branches of this committee in Paris and in London. There is no reason

why it should not continue in those centers after the war as a medium for gathering information of interest to the American business man. The chief functions of these foreign committees have been described as follows:

(a) The development of contact with all important research laboratories or agencies, governmental or private; the compilation of problems and subjects under investigation; and the collection and compilation of the results attained.

(b) The classification, organization, and preparation of such information for transmission to the Research Information Committee in Washington.

(c) The maintenance of continuous contact with the work of the offices of military and naval attachés in order that all duplication of work or crossing of effort may be avoided, with the consequent waste of time and energy and the confusion resulting from crossed or duplicated effort.

(d) To serve as an immediate auxiliary to the offices of the military and naval attachés in the collection, analysis, and compilation of scientific, technical, and industrial research information.

(e) To serve as an agency at the immediate service of the commander in chief of the military or naval forces in Europe for the collection and analysis of scientific and technical research information, and as an auxiliary to such direct military and naval agencies as may be in use for the purpose.

(f) To serve as centers of distribution to the American Expeditionary Forces in France and to the American Naval Forces in European waters of scientific and technical research information, originating in the United States and transmitted through the Research Information Committee in Washington.

(g) To serve as centers of distribution to our allies in Europe of scientific, technical, and industrial research information originating in the United States and transmitted through the Research Information Committee in Washington.

(h) The maintenance of the necessary contact between the offices in Paris and London in order that provision may be made for the direct and prompt interchange of important scientific and technical information.

(i) To aid research workers or collectors of scientific, technical, and industrial information from the United States, when properly accredited from the Research Information Committee in Washington, in best achieving their several and particular purposes.

Other machinery has been set up for collecting information during the period of the war. The War Trade Board, for example, is employed in studying the problems connected with exports and imports. Much information has no doubt been gathered by this board which should be made use of by the American business man. The Division of Planning and Statistics of the Shipping Board is also making exhaustive investigations into questions connected with imports. Data of this sort should likewise be at the service of the American merchant and manufacturer. There is also the Commercial Economy Board that has been busy studying the question of essential and non-essential industries and the possibilities of making economies in business practices. Many suggestions have already emanated from this board that should prove helpful to the merchant. There is no doubt that the experience and information acquired by this board will be very useful in the trade problems that are to come.

There is, furthermore, the Federal Trade Commission with its group of experts who have been devoting their time to the study of the most vexing industrial and commercial problems. This commission has been urging for some time that a permanent organization for business research should be established in the United States. The policy to be followed by this commission has been stated with force and eloquence by its recent chairman:

“We are talking a great deal these days about mobilizing

our industries and coöperating for industrial preparedness. We have been floundering about for many years with no definite plan. In fact, the first step has hardly been taken toward solving our industrial problems and achieving those results in business which we all know are absolutely necessary. Coöperation requires the interest and good will of both the government and business. Business men are anxious to coöperate with the government. It is the intention of the Federal Trade Commission, on behalf of the government, to lend its active constructive aid, and its earnest desire to do everything in its power to help to foster American industries. Its work extends beyond the mere proceeding against violators of the law. It is seeking to improve business conditions in such a way as to reduce the probability of violations of law. As will be considered in later chapters, it has begun at the foundation of business by encouraging better cost accounting and other business methods. It has begun to gather comprehensive data on industry. It is using its great investigative powers in coöperating with Congress and in furnishing information which will lead to sound business legislation. It believes that the day of the negative attitude of government is past and that the time has come when the government must take an interest in laying broad and secure foundation for American business life." (E. N. Hurley, "The Awakening of Business," pp. 167-8.)

A Research Bureau. While the United States Government has a very extensive organization for taking care of many of the national problems, there is still lacking in the judgment of many business men complete machinery for meeting the needs of those interested in business research. In order to fill in this gap it has been proposed that a Federal Trade Census Bureau be established, or that some kind of research institute be organized for this special purpose. The need for this new type of governmental machinery is stated in considerable detail by a recent writer on the subject of business investigation. If the idea is carried into practice, there would be done, then, for

the business man what has for a long time been done for the farming interests. There can be little doubt but that the idea would receive the indorsement of the leading business men of the country.

“An institute is needed for the organization of the collection and imparting of exact and reliable knowledge about facts and ideas. It is important that a means of communication be established between those who seek and those who have to impart special information about new facts and ideas. In order to obtain exact and reliable information on any subject it is necessary to know where such information is to be found, and what sources of information are most reliable. The proposed institute would first of all collect information about available sources of information; it would prepare a directory of directories, a catalogue of catalogues, a list of addresses of workers and investigators, a guide to special collections of written and printed material, of specimens and models, as well as to the expert special knowledge not yet public property. The institute would offer its services to organize bibliographical and index work, much of which is now done by isolated agencies and individuals, resulting in duplication and waste without making all the existing knowledge available. It would also undertake research and index work that does not come within the field of any other agency. The institute would, in a word, be a clearing house of ideas and an organizer of research. Many problems of to-day, that seem new to us, are really not new at all; we often find in old books and magazines important information about matters and methods that were once in vogue, but are now forgotten and which might aid in solving problems that have just come to the surface. . . . Every day some one wants to find out where certain kinds of information may be found. . . . These questions that press forward for solution cannot be answered by an isolated institution, however munificently endowed. The world's knowledge is not collected in one spot; it is scattered all over the world and must be searched for all over the world. The institute would therefore establish close relations with other institutions of similar nature in other countries, and direct common connections with

the large libraries, museums, schools, and learned societies and institutions of the world. The proposed institute would supplement the work of the libraries and museums. The latter collect and preserve the materials of research, catalogue them, and hold them available for investigators. The institute would go one step further, prepare the material for use, and even indicate its probable value for the purpose of its inquirer. It would act as an intermediary between the investigators and his material." (Josephson, "The Dial," Vol. 53, p. 375.)

The ambitious program, thus described, may at least in part be realized through some such organization as the Chamber of Commerce of the United States. Already this great body of business men has recognized the need for a research bureau. It is possible for them through their nation-wide organization to develop the machinery speedily for a national service to business men. The opportunity for doing good is great; the field is white already for the harvest.

Educational Value of Research. There is another argument for pursuing business research that is a little more abstract than the one which is based on the actual monetary returns to be derived from it. Business in general will become a better sort of thing when all of those who are engaged in it find it interesting. It is the dull, monotonous task that numbs the intellect and drains away the energy. The advocates of scientific management have urged that this movement renders even the simplest task interesting and of educational value. To the humblest workman his routine becomes a series of jobs which are to be studied. The spirit of a game enters into them. As he analyzes them more fully he finds them growing in interest. Some such effect may be obtained from commercial research also.

It is now well recognized by many merchants that sales people become more efficient as they know more about the goods they sell. Their interest is awakened, and they begin to study these goods that they handle from day to day. Then, too, it has been found that sales people can be taught to study the customers who enter the store. They learn to observe with keener insight and with a fuller knowledge of human motives. The procession of customers becomes a procession of interesting individualities. The day's work takes on some of the aspects of a moving picture with various scenes, amusing and serious, but all of interest. So the general attitude of research should appeal to individual interest and should thereby become of educational value. The whole sales organization may be turned into a veritable corps of research assistants.

One result which should be obtained from the spirit of research is an increased power of constructive imagination. A great deal has been said recently in business circles about the value of imagination in business. It is undoubtedly a much desired quality of mind. Imagination to be constructive must be able to realize fully all the possible influences in a given situation. This ability enables one to take the other fellow's point of view. It gives one the power to look at situations impersonally. By means of it one can anticipate human reactions. A certain retailer, for instance, decided that he would give an element of personality to his store by a rearrangement of the entrance. He constructed a short passageway, fitted this with chairs and a rug, put some ferns on a table, and added a few more homelike touches. He believed the reaction of people who passed that way would be favorable to his store. He foresaw an element of invitation in this arrangement. He saw truly. Many of the thousands of

feet that might have passed his door turned in because of these few extra items which gave distinction to the entrance to his store. This merchant had this quality of constructive imagination. He was able to anticipate the effect of situations upon individuals. What the rural merchant did in his simple and crude way can be done by thousands of others with far more skill and cleverness. Nevertheless, it is the same quality of mind that is sought by all.

Conclusion. This brief survey of what is being done in other countries and in our own shows clearly the character of the movement underlying the business of to-morrow. The manufacturer or merchant who is ambitious to keep abreast of the most progressive business practice must join in this movement. It has been made clear that the fundamental principle of the new business is the principle of research. This has already been applied with great effectiveness in the field of production. It is the corner stone of scientific management. But this is only the beginning. The future, alone, can unfold the possibilities in this new business attitude. The point for every business man to learn is, however, that he must know more about his business, both in detail and in general. His system of accounting should, of course, be clear and adequate. There should also be some system for collecting all the pertinent and essential facts bearing upon the welfare of his business. The practical business man needs more theory. He needs a new attitude toward his problems. The new attitude should be one of research. It remains to show how this can be accomplished in the most effective manner.

CHAPTER III

CHARACTER OF COMMERCIAL RESEARCH

Spirit of research — Character of research affected by character of problem — Research under changing conditions — Point of view — Character of goods — Technological changes — Research and commercial organization — Commercial research for the manufacturer — Commercial research for the wholesaler — Commercial research and the retailer — Trade and science — Conclusion.

This new movement for commercial research has for its ultimate goal a course of intelligent action. It may be said to begin with an attitude of mind. This is an attitude of thoughtfulness, of carefulness, and of thoroughness. It is a desire to understand the character of the problem which the business man faces in order that he may intelligently meet it. It is the general attitude of inquiry. The merchant or manufacturer who is laying the foundations of a permanent business must constantly inquire where he belongs in the scheme of things. He desires to know how the changes will affect his own activities. As far as possible he desires to anticipate all the business changes in order that his own activities will meet the needs of to-morrow.

Spirit of Research. The spirit of research is not the spirit of exploitation or of acquiring sudden wealth. It is the attitude of finding out what is worth while doing and how it may best be done. Economic activity should be an activity of service. The servant, that is the true servant, must desire to be worthy of his hire. There

is, therefore, need for a bit of practical philosophy in every business man. "One of the great and crying needs among American business men to-day is a broad view of business in general and a comprehensive grasp of the needs of industry as a whole. Too many American manufacturers and merchants center all their energy and attention upon their particular establishment and the work of making profits for it. Men at the head of factories need a point of view of what might be termed the statesmanship of business. They need to appreciate the fact that their plant is a part of a great industry; that their individual welfare depends very largely upon the welfare and progress of the industry as a whole, and of industry in general. Whatever promotes the welfare of other concerns in industry and the welfare of the broad group of people which we call the public is bound to react favorably on individual concerns." (Hurley's "The Awakening of Business," pp. 62-63.)

Character of Research Affected by Character of Problem. In general, the character of research will depend upon the character of the problem to be inquired into. A man studies the railway time-table and not the dictionary to find the best and quickest route to his destination. The chemist has his particular field of inquiry and his particular material for analysis. He must equip himself in order to use his apparatus and his materials with scientific accuracy. The student of physics has another kind of material and another set of apparatus with which to work. The psychologist has a far different problem and a different kind of apparatus. Each in his way, however, seeks the most reliable results and the most elemental principles upon which to base his conclusions. The chemist does not take psychological problems into his

laboratory because he feels himself untrained to deal with them. The psychologist on his side consults the chemist as an expert in his field. In research as in other departments of human activity to-day, there is much specialization. There was once an ambitious philosopher who declared that the whole realm of human knowledge was his province. He is an ignorant man, indeed, who to-day gives himself to such wild ambitions. In all kinds of research the beginning of intelligent work is to know what to exclude from consideration. The very alphabet of research is to know what to look for, what to work with.

In former times, under the old apprentice theory, it was felt to be necessary for a business man to know his business from the bottom up. In order that he might become fully acquainted with the details of the business, he began as an apprentice and worked his way from task to task until he reached the place of control. It was then thought that he was fully equipped to become a business manager. This process was, of course, slow, the instruction was of the most informal kind, and its value depended directly upon the character of the business in which the apprentice was employed. There can be no question but that such a course as this one has proved in many cases to be very effective. In our own country it produced the great group of self-made business men of whom we are still justly proud. It made the business man self-reliant and self-confident. It made him adaptable to meet new and unexpected situations. It gave him frequently that most desirable quality, self-control. If he was of the right sort, it gave him also a sympathetic understanding of the employees' point of view.

The weakness of the old apprentice system, however, is that it fails to give a broad outlook upon business in

general. The man who had come through this system of instruction might know thoroughly a single business, one method of doing things, but he was very likely not to have any basis for comparison and for determining what was best. It was out of this period that there came the saying, "A jack of all trades, but master of none." There was an element of truth in the old saying which we have realized in modern business. The apprentice system made for business tradition, for a fixed method, for a business practice to be handed down from father to son. There was thus a rigidity and an inflexibility about the business system that made it incapable of adjusting itself to changing conditions.

Later there came the period of specialization. Under this theory a man was to devote his attention to a very narrow field, but within this field he was to become an absolute master. It might be necessary, as a foundation work for such specialized study, that one first have a broad view of business. This was not, however, always thought necessary. If a man could do one thing better than any one else he then justified his existence. Herein lay a great weakness for the system of specialized training. A man who could do only one thing was safe so long as there was a demand for his services in that particular line. When changing conditions reduced the demand for that particular service, he then found himself in an unfortunate position. He could not turn readily to other things. He was a specialist without a job. Then there came to be a fear of the specialized niche in business. A man did not want to become a mere cog in a large machine. It made employment too uncertain for him. Any day he might find his job gone and himself unfitted for the work there was to do.

We have to-day reached the compromise in these two systems. On the one hand, we are not urging wholly to discard the apprenticeship system and, on the other, we are not urging to go the whole length with specialization. In order to combine the two it has been necessary to make the individual task simpler than it was before because the complexity of business does not permit a man to become proficient in all things. He must specialize to some degree and specialization means simplifying the work. Nevertheless, this simplified task could not be permitted to become dull and monotonous. The job, however simple, must be interesting. It becomes so as it is related to the whole. If the sales girl at the ribbon counter feels that her work, however simple and apparently unimportant, is yet an essential part of the entire store management, and that this task is in itself a matter for thought and improvement and analysis, she is likely to find her daily duty far more interesting. For, after all, in business as in every other kind of human activity, the task is interesting as it is understood. Out of this desire to understand, to relate the part to the whole, has come the movement for research.

It has been said that the beginning of research is an attitude of mind. As a matter of fact any kind of careful analysis smacks somewhat of the library or the cloister. In almost every kind of investigation the first duty is to find out what has been written on the subject. It is a waste of time and energy to go through the process of collecting material and analyzing material which has already been collected and analyzed by some one else and made available for ready use. As will be shown later, there is available to-day a great mass of information which almost any manufacturer or merchant might use

with excellent results. The reason why it has not been used more effectively in the past is probably due to this lack of mental attitude, which here has been called the beginning of research. While everything is not grist that comes to the mill, far more of the facts which are to-day readily accessible might be used to advantage by the business man.

Research Under Changing Conditions. Since the character of research depends directly upon the character of the problem studied, it follows that research must change with changing conditions. Intelligent study can only rise from a clear understanding of the influences at work. Research in any field aims at the isolation of modifying factors. A merchant, for example, may study as he will his own private business and may make his plans upon the basis of this knowledge, but his plans may all go awry because he has not counted upon the influence of competition. No business lives unto itself alone. It must adjust itself to all the circumstances of the situation. Furthermore, with the increased complexity of business, it becomes more and more necessary to see further into the future, to anticipate the effect of coming events. Probably the most important element in commercial research is its speculative character. What has happened is gone forever, unless it is made to be the basis for action to-day and to-morrow. In all manufacturing, for instance, there must be a buying of raw materials before there can be a sale of finished products, yet the manufacturing plans will depend directly upon an estimate of sales. "What will the market be for my goods in the coming months?" is the question to ask when planning on the purchase of materials. Because research problems run back finally to this anticipation of consumer

demand, a very large part of commercial research has to do with market analysis. Every change in the field of marketing needs to be quickly reflected in the field of purchasing and of manufacturing.

Point of View. The character of research will also change with the changing point of view. The buying of raw materials has one set of problems. The sale of manufactured goods will have another. To the small rural retailer the chief menace may be competition of the mail-order house. From his point of view the increase in mail-order trade may seem a social crisis. To the consumer the advantage to buy direct by mail may appear to be an excellent thing. There is much sense in the old saying that it makes all the difference in the world whose ox is gored. The principle certainly holds in all research work. A good example of this is found in the question of price fixing. Certain manufacturers claim that they have the right to fix the resale price of their goods. Certain retailers claim that they are deprived of their rights if this power is given to the manufacturers. Always the character of the study will be affected by the immediate interest. It is true that this immediate interest may often be the cause of error in the research work.

Character of Goods. The character of research will also change with changes that affect the goods themselves. If goods are sold in bulk, there may be one set of problems that rise for analysis; if goods are sold in package under a brand name, a different group of problems appears. To-day the manufacturer may be making a score of different styles of goods in order to satisfy the whims of his customers. Research might show him by what means he could reduce this number by one half. Perishable products offer one set of difficulties; staple

commodities may offer another; goods that are sold on the basis of style bring with them their attendant troubles; goods that must be handled by a number of dealers at the most convenient places for the consumer will show another group of questions.

Technological Changes. Trade investigations will be modified by changes in transportation facilities. A good example of this is the rise of the refrigerator car. It is necessary to-day for the railroads to employ a man who is a technical expert in the subject of refrigeration. Many business concerns also that handle perishable products must make inquiry in this field of technical research. Cold-storage warehouses and the refrigerator car have revolutionized the meat-packing industry and the fruit industry. Those who are interested in these products must necessarily keep abreast of the progress made in cold storage and refrigeration. It may be that these will be only new phases of old problems, but market conditions will so change under the influences of these changes in transportation facilities that the whole outlook of the business man may become different.

Since a large part of research has to do with the human element in business, it must necessarily involve such things as population movements. These are generally slow processes and the effects are not readily discovered. It may now be seen, however, that there have been great changes in trade organizations due to the westward movement of population. Manufacturing has followed the course of this movement. Some time ago New York was the center of textile jobbing. To-day only a few of the old jobbing firms remain in that trade center. On the other hand, in all the Middle-West towns of any considerable size there is a jobber in textiles. Such important

changes as this must be followed by the intelligent and progressive business man. Wood-working trades have likewise been compelled to follow the receding forest line. Cities that years ago had flourishing businesses in the wood industry have found it necessary to develop other enterprises to take the place of these.

It may be said in general that commercial problems change with all changes in industry. While the principles of research in these problems may remain constant, the material can wholly change. New conditions, new factors, new points of view will all modify the method and the materials of research. The character, therefore, of research at any given time depends upon the character of industry at that time. To-day stress may be laid upon the mechanical problems in a new machine. To-morrow the emphasis may be upon the selling organization. In all these cases research must be sufficiently adjustable to meet new conditions.

Research and Commercial Organization. The manufacturer or merchant who sets about a study of his business finds himself in the midst of an environment not of his own making. He must accept conditions as he finds them and adjust himself to the requirements of the situation. To-day, for example, in the United States the type of distributive organization is changing. The middlemen of yesterday are no longer accepted as absolutely necessary in the scheme of business organization. New institutions have arisen and old services have been combined under a single control. If the business man is to know his business thoroughly, he must look abroad upon this industrial and commercial organization with which he is to deal in order that he may know better how to adapt his methods to the requirements of the situation. He ought

to know something of the development of the distributive system in order that he may more intelligently judge the changes that are taking place. A brief descriptive sketch will here be given for the purpose of indicating this phase of the problem. It will be understood in this discussion that the character of business research will be modified by the character of the existing commercial organization.

Those institutions, or departments, which have to do with the buying and selling functions in modern business make up the various parts of what may be called commercial organization. It is clear that these functions of buying and selling belong to practically every kind of business enterprise. The manufacturer buys his raw materials and sells his finished product. The merchant buys his stock of goods and sells it to the consumer. The railroad buys its equipment and sells its services. The workman buys food and clothing and shelter, and sells his energy and skill. The same principle applies to such institutions as the bank, the grain exchange, the warehouse, and all other types of business. Buying and selling are the beginning and ending of any business undertaking.

In the development of our modern business organization there has been, on the one hand, a tendency to greater specialization. New types of middlemen have risen to take care of certain functions which have become increasingly important with an increase in the complexity of business. There is to-day a multitude of what are called functional middlemen. There are, for example, specialized jobbers, specialized brokers, warehouse men, transportation men, specialized retailers, insurance men, banks, commercial paper houses,—all of these having come into being in response to a demand for a peculiar and important service.

On the other hand, there has been a trend toward business consolidation, or business integration. Recent years have seen the rise of large business concerns controlling under one management many of the functions which belonged to specialized middlemen. For instance, the mail-order house has had as its primary purpose the merchant function. It had planned to buy direct from the manufacturer and sell either in wholesale or retail lots to dealers or to consumers. The most distinct type of mail-order house has bought direct from manufacturer and sold direct to the consumer. But in order to assure itself of the quality and quantity of goods it wanted, this new type of retailer has often found it necessary to take over the factory itself. Certain large jobbers, also, have reached back to the source of raw material and now manufacture many of their own goods. Certain manufacturers have entered into competition with the retailer by establishing manufacturers' branch stores. To-day on all hands may be seen these two agencies at work; one making for a more complex business organization and the other working toward a simplified organization. One of the first duties of the business man is to see where he stands in relation to these two agencies.

But in all the intricate organizations of to-day there is a single and common purpose. That purpose is to carry goods from their raw-material source to the consumer in such form and at such time and place as will best suit his wants. All economic activity is a more or less continuous process, in spite of the fact that there are so many different functions and institutions. Business is a great coöperative concern in which all work for this common purpose of supplying economic goods for human wants. No matter how keen the competition, how intense

the feeling between competitors, from a large point of view all business men coöperate.

Since the primary purpose of commercial organization is that of buying and selling, it may be said in general that this type of business organization stands between the producer and the consumer. This is true of raw materials as well as of finished products. The so-called extractive industries procure raw materials from their various sources, such as the mine, the forest, or the farm, in order to sell them at a profit. Between these producers and the manufacturing industries that convert the raw materials into finished products there has arisen a complex commercial organization. This organization is made up of commission men, merchants, jobbers, brokers, warehouse men, cold-storage men, owners of elevators, dealers on exchanges, transportation men, and many others. The manufacturer in purchasing his raw materials must cope with this highly specialized commercial organization.

I Raw Materials	II Extractive Industries	III Commercial Organization
IV Manufacturing Industries	V Commercial Organization	VI Consumer Demand

Stages in the Economic Process.

And when the manufacturer looks in the other direction toward the consumer market, he finds that there, too, stands another kind of commercial organization, composed of many specialized middlemen, which shuts him off from direct contact with the consumer. In selling his finished products the manufacturer finds that he must deal with

this highly specialized commercial organization. It is obvious that he cannot know his business with any great degree of thoroughness until he understands fully his relationships with these kinds of business institutions. These relationships will, of course, change with every change in the trade organizations themselves. These, too, he will follow carefully, if he is a progressive business man.

Types of commercial organization change to meet changes in industry. The most important factor in recent years that has made for a modification of commercial institutions has been the widening of markets due to an increase of population and better transportation facilities. Entirely new problems have developed as the result of these influences. These changes have had to do specifically with (1) the rise of the big manufacturer; (2) the rise of the big jobber; (3) the rise of the new type of retailer.

With the increase in population has come an increase in purchasing power among the consumers. This greater demand found its way through the existing distributive organization back to the manufacturer. With the great development in business it was inevitable that certain types of manufacturers, dealers, and retailers should find themselves in particularly advantageous situations. Small towns grew rapidly into large trading centers. Small manufacturers increased their business many fold. Jobbers did likewise. Retailers, also, found their volume of business vastly increased. It was out of this situation that there arose the three new types of business men mentioned above.

When the manufacturer found his business of great volume and his capital greatly increased he looked about him to extend his power of control. At first he reached back

to the sources of raw material and brought these under his own management. He could now be sure of the materials for manufacture. He had thus eliminated the commercial organization which stood between him and these sources. But he was still shut off from the consumer by the distributive system which handled his finished products. In many cases it was not wise for him to undertake the retailing of his goods. He desired, however, to control these goods as they came into the hands of the consumer. The method which he devised to accomplish this purpose was to brand his goods, identify them with himself, and advertise nationally to the consumer. In this way he slipped past the jobber and retailer and bound the consumer to himself.

In order to combat this strategic move on the part of the manufacturer, the jobber also began to brand the goods which he handled. He saw that he would be in the control of the manufacturer if he submitted to the manufacturer's control of consumer demand. In consequence the jobber advertised his own branded goods to the consumer. But in order to secure an adequate supply of these goods he often found it necessary to take the entire output of a factory, or to own and control the factory for himself. Many commodities that are well known throughout the country to-day are jobbers' brands. Probably the most conspicuous example is in the hardware line.

There came into this situation the new type of retailer illustrated by the department store, the mail-order house, and the chain store. They, also, resented the appeal by the manufacturer direct to the consumer. It seemed to them that if they permitted this control by the manufacturer of consumer demand, they would become mere order

takers and cease to be merchants. In order to combat the influence of manufacturer and jobber brands, they sought to put their own brands on the goods they handled. So to-day there is a battle of giants for the control of consumer demand. By means of branded goods, by a vast amount of advertising, both nationally and locally, these three new types of business men are striving to control the expenditure of consumers in the country.

It is obvious that the business man who desires to understand clearly the influences that affect his business must have a broad view of these recent tendencies. In some way or other, directly or indirectly, he will be influenced by them. The best way in which to find out where he is in the scheme of distribution is for the business man to study the development of the existing distributive system. Commercial research, therefore, must include this phase of investigation.

Commercial Research for the Manufacturer. It has been said that research will depend upon the point of view for its emphasis and for its material. If the investigator looks at the problem from the point of view of the manufacturer, he will find that there are three more or less distinct phases. There is, first, the problem of raw materials which falls to the lot of the purchasing department for solution. There is, second, the field that has been largely preempted by industrial management experts, which may be called the field of internal manufacturing problems. The third phase is that of selling the finished products. It is to be remembered that for the manufacturer, as well as for other business men, the alpha and omega of his calculations are merchandising.

A certain manufacturer of soft drinks had established a large demand for his goods, had expended a vast amount

of money in national advertising, and then discovered that the supply of one of the essential ingredients of his commodity was failing him. Disaster seemed to stare him in the face. In order to meet the situation it became necessary to go to great expense to find adequate sources of supply of this particular material. A single experience taught thoroughly the lesson to this business man, so that now he controls, himself, a sufficient supply for any probable demand of his goods. This instance illustrates the need for research in the field of raw materials in order that the business may be well controlled and prepared to meet the demands upon it.

A large planing mill was established in a growing city in Missouri. Through many years it was able to build up a very excellent business and had established itself firmly in the minds of contractors throughout the region. But the eyes of those in control had been turned toward business getting, leaving the question of materials to care for itself. Gradually the timber line receded until it became a more and more expensive matter to secure the required lumber with which to work. The management found it more difficult every year to meet the competition of those who were located nearer to the source of supply. Business dropped off. New sources of lumber were eagerly sought, but none could be found near at hand. In this case the management undoubtedly had been shortsighted, for research would have shown them the need of assuring themselves of a continuous supply of essential raw materials.

There is also the problem of adaptability. Demand for goods changes with the years and no amount of advertising will stay it. Manufacturers of cereals have found it necessary to substitute one material for another to meet

this shifting demand. This has been true in many other kinds of commodities. Research aims to give a business flexibility and adaptability. Guesswork and shortsightedness tend to fix the business man into a certain rigid system. In this case his plan is to run the business as it is rather than to adjust it to new conditions. Research aims to gather the material for intelligent administration, which means adjustment to new phases of demand.

This type of problem can be illustrated from one of the examples given above. The planing mill that found its source of raw materials waning was able to maintain itself by changing the character of its product. From indoor finish which it formerly furnished for contractors, it turned to the making of fruit crates, because just at the time of the failure of supply of high-grade lumber, those industries formerly engaged in making crates for the fruit regions went over into munitions making. The management of this particular planing mill was able to see the opportunity for adjustment and so to save itself from disaster.

In the field of finished products the problems of the manufacturer are legion. Only a few of them can be suggested here. There is, for instance, the question of new opportunities. Everybody is looking for these, of course, but he who has been trained in observation is likely to be quickest to see the opportunities. Suggestions may come from the most unexpected sources. One man, for instance, happened to look at the Lost and Found column in the daily paper, and noticed the great number of ladies' pocketbooks listed there as being lost. His attention once being attracted to this subject, he was led to inquire the reason. It occurred to him that it did not all lie in the carelessness of those who carried these pocket-

books, but was due in part, at least, to the character of the pocketbooks themselves. At that time there came to him the idea of making a pocketbook that would not be so easily lost. Here was a new opportunity.

There are those manufacturers who are discontented with the existing distributive system. They have found it too expensive and too cumbersome. One manufacturer of typewriters, for instance, has dismissed fifteen thousand salesmen and agents, has abandoned branch offices in fifty cities, and has undertaken to sell the machine direct to consumer by mail. This is a daring adventure and must have required courage on the part of the management, and yet such enterprise and independence may be the price of the highest success. A manufacturer of wagons also once attempted to build up a direct-by-mail selling system. He dismissed his agents in the various small towns throughout the region where his product was sold. Through advertising he appealed direct to the consumer. His venture was a failure. Some of the costs he had failed to count. His critics have said that it was impossible to sell wagons which demanded such a large initial expenditure without salesmen. Probably this manufacturer is convinced of the truth of this criticism. In any case he has returned to the old system.

The manufacturer by research may also become more fully acquainted with his commodities. One maker of textiles had sold to a retailer for fifteen years on a contract that called for cloth of a certain percentage of wool. This retailer, on the word of the manufacturer, had guaranteed the cloth to be as represented to him. An examination, however, showed that this was incorrect. No one was more astonished than the manufacturer himself to learn that his goods were not as represented. An inquiry

revealed the fact that some production manager had changed the plans without notifying the manufacturer. Another maker of textiles has advertised that he has secured the written opinion of thirty-six experts as to the best way to shrink cloth. A maker of shoes has declared that, "For many years we have made it our fixed policy to acquire every possible bit of information about the shoe industry which we can obtain from any source and to record such information for ready access. Our specialists in every branch of the shoe business have made a continual study of factory methods, manufacturing policies, material, production, styles, and workmanship. This knowledge adds remarkably to the character, quality, and value of our shoes. We test every new process or idea that promises improvement. The great volume of our business enables us to specify that new ideas shall be utilized even where it requires a radical change in the standard practice of a shoe factory. Every shoe we sell evidences the wisdom and value of this policy."

This brief survey indicates some of the problems which the manufacturer must solve by means of research. There are, of course, countless others. To-day in all complex business where there is need to anticipate market demands as far as possible, it becomes more and more necessary to have a complete knowledge of all the factors at work. The principle is clear and definite in this case: The more complete the knowledge, the less the risk. As the manufacturer increases his knowledge he becomes more independent of the distributive system that handles his goods. He is more nearly in a position to find direct contact with the consumer. It may be said, in general, that the manufacturers' problems will have to do with one or the other of three phases of his business. First, those problems

that have to do with the character of his goods, and, second, the problem of finding a market, and, third, the problem of selecting the best trade organization.

Commercial Research for the Wholesaler. The middleman should remain as a part of business organization only so long as his service justifies his existence. If goods can be carried from their source to the consumer more economically and efficiently without his intervention, then the sooner he is eliminated the better for all concerned. His chief reason for being is that he can perform a part of the distributive service more effectively and more economically than the manufacturer or the retailer can do it for himself. The main functions which have been left to the middleman in the wholesale trade are the assembling of goods from many widely separated small sources into large wholesale lots, aid in financing the distributive process, sharing of the risks in business while distribution is in progress, and a superior knowledge of general market conditions. The middleman understands well enough the importance of knowing market conditions. Superior knowledge of this sort has been his stock in trade from the beginning. He has been one of the first to see the need of careful analysis, and also has entered among the first into the field of commercial research with a definite organization. The immediate purpose in his mind has been to maintain the advantage which a superior knowledge secures. In the long run, he sees, also, that his position in the distributive organization demands a more complete knowledge of production and of market demand than any one else is able to obtain. In recent years he has felt an increasing struggle against forces which tend to eliminate him. The condition to-day is such that he must now justify himself if he is to continue a successful existence.

There is need that he ask himself seriously the question: "Where do I fit into the scheme of things?"

In former times, the wholesaler was of a passive character. He did not go out in an aggressive manner to seek trade. Business came to him, rather, on a personal basis. Ofttimes the wholesaler had come up through the retail system and had made personal connections far and wide. It was on the basis of these connections that he maintained his business. Retailers dealt with him because they knew him. Since he thus controlled the retail demand the manufacturers sought his aid in distributing their goods. His position, therefore, was that of a mediator between the manufacturer and the retailer. From the former he learned of conditions in the field of production and from the latter he gained a broad knowledge of consumer demand. Apart from the financial assistance which he was able to give both to the manufacturer and to the retailer his essential duty was that of a purveyor of knowledge.

In many lines of business, however, the passing years have brought radical changes. As we have pointed out above, the manufacturer, on one hand, has reached past the wholesaler to the retailer and even to the consumer by means of branding goods and advertising. The retailer, on the other hand, has either taken over the wholesaler's functions, or has reached past him to buy directly from the manufacturer. It is against these influences that the wholesaler must struggle. Indeed, he is struggling against them with much force and aggressiveness to-day. There is an interesting analogy to this situation in the development of railway transportation. The great trunk lines that reached out from the trade centers in the East, such as New York, Philadelphia, and Baltimore, to tap the fertile reservoir in the Mississippi Valley, all concen-

trated their efforts on reaching Chicago, St. Louis, and Cincinnati. For these roads at the time of their building, the cities of the Middle West were the ends of the line. The immediate effect was to concentrate trade in these Western cities. In fact, these three Middle-West trade centers easily dominated the entire region. But the day came when other railroads found their way westward to the Mississippi River without touching these three trade centers. They ran past Cincinnati, past Chicago, and missed St. Louis, touching the Mississippi River at such places as Dubuque, Hannibal, and Davenport. Immediately consternation arose in the trade centers at Chicago, St. Louis, and Cincinnati. The trade equilibrium which had been established was overthrown. An entirely new adjustment had to be made. This is very much the situation of the wholesaler in the modern system of distribution. He is to-day in the process of making a readjustment.

This period of transition for the wholesaler reveals with great force the need for, and character of, commercial research. Like the manufacturer, his problems are of many different sorts. One or two illustrations will show their main characteristics. It is, for instance, of vital importance to the wholesaler that he should learn who controls at the moment of sale. If the retailer or his salesman at the critical moment of purchase gives the deciding voice as to what the customer shall buy, then the wholesaler's chance is extremely good. He can concentrate his attention upon the retail salesman. If, however, the customer has already been sold by means of national advertising on the part of the manufacturer, and the retailer has become merely an order taker, then the wholesaler's task is more difficult by far. It is his duty

to determine as definitely as possible what influences are dominant in the retail sale.

The character of the goods which the wholesaler handles will also affect the character of his research problem. In the case of what may be called convenience goods, such as cereals, food products, and staple articles of small units of cost, the manufacturer is desirous of finding as many outlets for his goods as possible. The consumer will buy at the nearest and the most convenient place. The manufacturer will desire that his goods shall be carried in the largest possible number of stores so as to be in that most convenient place. But a single manufacturer cannot well afford to carry the thousands of accounts necessary in order to reach all these small retail outlets. Here, of course, is the chance for the jobber. His investigation should reveal the advantages of his position so clearly that he can demonstrate those advantages both to the manufacturer and the retailer.

Manufacturing conditions may also create problems for careful research. In the wool industry, for example, the factories are concentrated in a restricted region in the East. Wool is grown in most of the states in the Union. In the Far West it is produced in large quantities on the ranges, in the Middle West the "fleece wools" come in small quantities to the rural trade centers. This commodity is very difficult to buy because the question of grading is a hard one. It requires expert judgment to purchase wool in the grease and determine beforehand its scouring value. Furthermore, the manufacturer's demand for wool depends directly upon conditions in the textile industry. He cannot know beforehand the amount of any grade that he will want. He needs, therefore, ready at hand a large storehouse of wool of all varieties

and grades at all times of the year. Here is a task for the wool jobber. An analysis of the situation will show him the advantages in his position. So long as conditions remain as they are to-day, this position seems secure. It is the duty of this jobber, however, to keep in instant touch with all the changes that may affect the situation.

No group of business men has done more to organize the system for securing reliable market news than the wholesalers. This is because they have realized more fully than others the good strategy of a superior knowledge of trade conditions. Nevertheless, it is clear that the very efficiency of a market news system may tend to weaken the position of the wholesaler. It has been shrewdly remarked that, "The middleman by his own efficiency tends to eliminate himself." Once the market news system has been set going it is not so easy for the wholesaler to control it. Both the manufacturer and the retailer are very likely to benefit by such a system. So long as the producer and retailer are in ignorance of general trade conditions, just so long are they willing to have the wholesaler shoulder the speculative risks in business. In a sense the wholesaler must always be a speculator, and as a speculator his success depends upon a superior knowledge of market conditions. If the manufacturer knew as much of the market as the jobber, there would to-day be every reason for him to sell direct to the retailer. The broker justifies himself by a greater knowledge of the sources of materials, and the demand for these materials. The same argument holds true for the commission merchant. He should accept things on consignment only because he has closer contact and a more complete knowledge of the market than the producer.

It may be seen, then, that the character of the problems for the wholesaler varies in much the same manner as those of the manufacturer. Every shifting in trade relationships will produce new problems. The very fact that the wholesaler is a middleman, a mediator standing between producer and retailer, shows that he has to know the business of the producer as well as the business of the retailer. There are, of course, in addition, his own individual problems to deal with. As in the case of the manufacturer, the wholesaler's study also, will be concentrated upon one or the other of three essentials of business; the character of the commodities, the nature of the market, and the character of the trade organization.

Commercial Research and the Retailer. A great deal of publicity has been given in recent years to the crude and careless methods of the retail merchants. They have not known their business, it has been claimed, even in its most elementary parts. The reason for this is generally attributed to the fact that retail business is the only "profession" that can to-day be entered without previous training. The general idea is held that anybody can become a successful retailer. The results of such a situation appear in the high mortality list of retailers due to their wasteful and slipshod methods.

These criticisms have been aimed in general at the so-called regular type of retailer and not at the new type of retailer, such as the department store, the chain store, and the mail-order house. It is generally admitted that these new retailers are among the leaders in merchandising. They have been aggressive in their methods and they have appreciated the value of careful study. One large mail-order house, for example, has a well-equipped laboratory

for the testing of its goods. Chemical and physical tests are made in order to see that the descriptions which appear in its catalogues are accurate in every detail. Excellent systems are also in use to collect and record invaluable information about existing and prospective customers. The great filing systems of the leading mail-order houses are models in their field. But even these new retailers are only beginning to awaken to the real value of careful research.

It is in the field of the regular retailer that there is the greatest need for a more complete knowledge of business practice. All those who have to deal with this type of retailer agree on the fact that he must be more thoroughly educated. Retail associations, both local and national, are turning their attention to this subject of educating the retailer. The Wholesale Shoe League has written of the shoe retailer in this way: "We are handicapped as an association in doing this work because the educational qualifications of a large majority of the retailers of shoes, particularly in large cities, are so low as to make it difficult for them to adopt many of the methods which have been otherwise successful." The Federal Trade Commission has said that many of the retailers in the country could not supply the commission with the simplest facts about their business. The president of an Eastern grocery association thinks it is "simply appalling to find so many men engaged in one line who seem to have no idea of how to keep any kind of records or even of how to take inventory." At a meeting of the National Association of Credit Men a report was presented which showed that thirty per cent. of the goods sold by grocers in one large city was sold at or below cost; that all "flat contract"

Many men are discovering that they can secure great aid in the human relationships in business through psychology. Undoubtedly in the years to come men will go much further in the direction of taking over into business the discoveries of natural and social science. It is the belief of many that trade itself may become a science with a definite body of principles to be mastered and to be applied to business problems. Surely, the beginning of such a movement lies in commercial research.

Conclusion. No one doubts to-day that big problems loom ahead. These are of many different kinds,—political, social, industrial, and commercial. Of these, however, the commercial are not the least complicated or least vital because they are fundamental. The beginning of intelligent action must, therefore, rest on a careful and thoughtful method of approaching these commercial problems. There may be need for new methods of control. If so, these methods of control should be wise and intelligent. They can be wise and intelligent only if based upon thorough and broad knowledge. Intricate and complex problems can be thoroughly known only by taking them apart and isolating the factors in them. This is the fundamental duty of research.

The spirit of research is a desire to know more, in order that one may act more intelligently. The true investigator is he who is ambitious to see farthest and most clearly the way that lies before him. He is ever busy to discover those broad interrelations of business. The world, after all, is fast becoming a single trade unit. For many goods already there is a world market. No narrow point of view will suffice, for the future. Business men must begin to think internationally.

Many people in many different lands are to-day becom-

ing thoroughly aroused to the need for industrial and commercial research. One business man from one of the foremost nations has expressed eloquently and forcibly his position on this subject:

“The fundamental principle on which industrial research rests is that no industry can make progress without the continual addition of new knowledge. In earlier days this new knowledge was provided by the growing experience of the individual workers. This, together with results of the efforts of occasional inventors, ultimately became the common property of the industry. With the increasing complexity of industry and more exacting competitive conditions, this new knowledge became increasingly difficult to provide, until farseeing capitalists appreciated the need for organizing means and using every facility that science affords to provide a continual influx of knowledge. These men at the same time appreciated that sooner or later every scientific discovery finds its use in industry. It is along such lines that modern industrial research has developed, and its use in this country is necessary because it depends on this fundamental principle, and not merely because other countries have already taken advantage of the facilities it affords. While this is so, some guidance can be obtained from the progress our competitors have made. In Germany, for instance, the important feature arising from industrial research has been the great appreciation shown by manufacturers of the benefits to be obtained from the application of science, and the absorption into their industries of very large numbers of highly trained technical men. Particularly have the benefits of industrial research been seen in the chemical and electrical industries. In the States an enormous amount of industrial research has been carried out by individual firms.”—(Ernest J. P. Benn; “Trade as a Science,” pp. 128–9.)

The attitude expressed here is fast becoming the attitude in all of the leading nations. The business man who fails to grasp the significance of this movement is destined

to fall behind in the race. He must understand the character of scientific research, and he must be eager to know his business more thoroughly in order that he may meet more successfully and intelligently the new problems of to-morrow.

CHAPTER IV

SOURCES OF BUSINESS FACTS

Sales records — Purchasing records — Movement of goods — Bargain sales — Searching the books — Using one's sales forces — Research department — Governmental sources of business information — Merchandising service department — Trade journals and associations — Reference books — Miscellaneous sources — Conclusion.

Commercial research, like charity, begins at home, and the very first step which any manufacturer or merchant should take is to become better acquainted with his own business. There is at hand a vast amount of unused and unanalyzed material which might be put to a very good purpose. Records that have been kept for other uses will be found to throw a great flood of light on conditions in the market and conditions in the field of raw materials. However dead these records may be, so far as accounts are concerned, their significance lies in the fact that they were once the vital facts of a business. The chief point to keep in mind is that one should make the best use possible of his own records.

Sales Records. One of the most obvious and one of the most useful sources of business facts which will be helpful in commercial analysis is the record of sales. Even the most elementary system of bookkeeping ought to show these data in some usable form. It may be necessary, however, for the future to keep the sales accounts in a different way in order that their significance may be more clearly seen. These general statements apply to all kinds of business. The manufacturer will have his sales rec-

ords and from them will deduce undoubtedly the production plans for the coming period of three, six, nine, or twelve months. The merchant will have his sales records and will use them also, no doubt, in the formulation of his stock buying. Neither manufacturer nor merchant can administer his business with intelligence and foresight, unless he have an intimate knowledge of his record of sales.

One large manufacturer requires that his sales organization shall furnish him at the end of each six months a careful estimate of the amount of goods which can be sold during the coming half year. These estimates are prepared from the experience and observation of salesmen and from the sales record during the past six-month period. It is, of course, necessary for the sales manager in this company to explain every change in the volume of sales. These estimates that are made at the semiannual periods afford a splendid basis for comparing records of the past and for estimating the effect of various influences in the near future. If a certain district has fallen behind in sales, the reason for this decline must be sought out. If in another district there has been a bulge in the sales, the causes of this also should be definitely determined.

Certain large mail-order houses find it necessary to make their plans months in advance. Large catalogues are published every six months. There are in these catalogues thousands of articles offered for sale. How much of each one is required to be sold during the coming six-month period, where an adequate supply can be had, what will be the range of prices, are some of the problems which must be solved beforehand. In these concerns, as in every other, the future can be judged most accurately from the past and the present. The estimate, therefore, must finally rest upon the sales records.

It is not the purpose in this place to make a constructive analysis of sales records, but rather to indicate some of the possibilities for securing essential facts for the intelligent control of business plans. Sales records may be kept in many different ways. The general principle which should guide in their construction is, of course, the purpose for which they are to be used. There may, for instance, be a classification of sales on the basis of territories or districts. If the records have been kept in this way, intelligent use may be made of them for certain purposes. Records also may be based upon the individual salesman as a unit. This method, also, has its advantages. Or, again, the unit may be the commodity or line of goods, or department. These records, again, may run on the basis of season, geographical division, state or national, or, indeed, on any other definite principle that can be applied to such facts.

Even though the sales records have not been kept on the basis of any clear-cut analysis, they may still afford reliable and pertinent facts. A survey of them should reveal, for example, the best sellers that are carried. The "stickers" will also be revealed by them. There should be the effect of crop influences, of disaster, such as flood or fire or drought. It is clear, of course, that records which are kept without careful analysis will require more labor for their intelligent interpretation than those which have been analyzed as they were recorded.

The main point to keep in mind is that these records afford a handy source of valuable material which may be used in commercial analysis. It may be desired to form a different house policy or a different sales plan for the future. Possibly the business manager wants to set new, fair standards for salesmen, or to determine a fair bonus

on sales. In all these cases he will be led first or last to his sales records.

The causes of sales variations are of two general classes ; those that are temporary and those that are permanent. A temporary cause may frequently be misleading and result in too great optimism or in too extreme pessimism in the plans for the future. Careful research will aid in escaping both extremes. An intelligent analysis of sales records will mean the separating of permanent from temporary influences. The permanent causes of change are, of course, the principal ones to be studied. Are these changes toward increase or toward decrease of business? This is the pertinent question which the manufacturer and merchant must answer.

Purchasing Records. There are also the purchasing records which will often reveal essential facts for business managers. These facts will have to do with sources of materials, supply of materials, variations in price, changes in season, quality of goods, standard tests, and many other minor phases of the business. It is well known, of course, that accurate records must be kept of purchases in order that costs may be known. This, too, is true for all kinds of business.

As in the sales records, there are many different ways in which the purchasing records may be analyzed. The character of the business and aim in view will be the best guide in this matter. Some general suggestions, however, will be made here. From the purchasing records more intelligent and scientific stock plans may be made. A more careful estimate of the amount of the working capital needed in any given business may also be had from this source. There is the question of turnover which is a very live topic in these latter days. This subject may be stud-

ied from the purchasing records. The business management may desire to buy certain goods for advertising purposes. Where such goods are to be found, in what quantity and at what price may be learned from the purchasing records. If a business is to prosper, whatever is bought must be sold, and this means that the intelligent buyer will study his own records as well as those of the sales manager.

A study of the purchasing records leads also into an analysis of goods. Very often the purchasing agent needs to be a highly trained expert. Take, for illustration, the case of wool. He who buys raw wool in the grease must estimate the value of that product to the manufacturer. No novice can do this. Take, again, the case of raw cotton. Only in recent years has this commodity been reduced to anything approaching scientific standards. Even in the case of wheat there have been many different judgments as to grades throughout the United States, until the uniform grading standards were established by Federal law. The effects of expert knowledge required of the purchasing agent should appear in the purchasing records.

It is now generally accepted that one of the most difficult problems in accounting is the valuation of goods or materials after they have been bought. There begins at once a deterioration in value. Destruction is a fundamental law of nature and no amount of repair can nullify it. But quite apart from this phase of the question, there is much to be learned from a careful analysis of experiences in buying raw materials and in buying finished goods. Certain large retailers, for example, with plenty of capital at hand, are constantly on the outlook for bargains. They have their regular sources, they have their emergency

sources, and they are free in the rest of the field to pick up *special consignments of goods at a moment's notice*. A handsome profit is very often realized from these goods. An analysis of the purchasing records should show all dependable sources, all emergency sources, and should give some clear idea of where to watch for bargains.

Sales records and purchasing records are complementary. They should show both sides of buying and selling. A general survey of these two types of records ought to reveal in a broad way the chief outlines of the buying-and-selling field. If it is the desire of the business manager to construct a budget for the control of his business, he will need an analysis of both of these records. As a matter of fact, a detailed knowledge of purchase and sale is essential for intelligent control. The main point to be kept in mind is that these sources of essential facts are ready at hand for the service of the business manager.

Movement of Goods. The business principle of the day is the largest possible volume of business with the most frequent possible turnover of goods. Buy often, is the edict, in small lots and wisely. Take all discounts. Keep money at work. Under keen competition of the present day the margin of profit is narrowed to the point where any slight divergence may bring a loss. To have on hand a large amount of goods that are daily affected by the law of depreciation greatly increases the risks of business. The best way to escape these risks is to buy in small lots and more frequently, and thus secure a more rapid turnover with the minimum of working capital.

There should be in every business a set of records that will show the movement of goods out of the factory or off the shelves. Every lot of goods that fails to move with reasonable rapidity means a lack of adjustment between

the demand and supply. Such a condition results from ignorance or misfortune. No merchant buys goods and no manufacturer makes goods unless he expects to sell them at a profit. One's own records — the inventory — should give evidence on the subject of the movement of his goods. It is a vital question and should interest every business manager.

It may be possible to ascertain the movement of goods from the purchasing and sales records, if they have been kept as they should be kept. In any case some analysis of these records is required. Fifty years ago it was the custom among retailers to buy once or twice a year. This was due to the fact that the buyer went to the central market, which was generally a long journey and an expensive one. He bought his goods for the coming half year or twelve months. He took a chance on style and amount as well as price. He expected these goods to last him for the season and he hoped that he might have very few left at the end. Under these circumstances there was, of course, a very great risk unless the goods were very durable and were staple products. This condition is all changed to-day. Every retailer has an opportunity to buy frequently during the season and can quickly renew any stock that is running low. Market facilities make it readily possible to follow the principle given above.

Bargain Sales. In connection with the lack of adjustment between the supply of goods on the shelves or in the wareroom and the demand for those goods, there is the subject of special or bargain sales. This is a matter that is in need of immediate, careful study. There has grown up, especially in the retail system, a regular institution of special sales. These may take innumerable forms, such as bargain sales, season-end sales, fire sales, mill-end

sales, clearance sales, bankruptcy sales, annual sales, and scores of other kinds. So far, however, very few business men have earnestly sought to find the economic principles upon which these sales are based.

Altogether too frequently bargain sales are a confession of error if, indeed, they are not dishonest. There can be but two valid reasons for special sales. Both of these are the result of misfortune. One reason is that the merchant or the manufacturer has more goods than he can dispose of at the ruling price, either on account of quantity or of quality. The other reason lies in some misfortune to which the merchant or manufacturer has been subject. This latter may be either a fire or some financial ill luck. In case of goods that have been damaged by fire or water or other accidents, it is obvious that if there is still value in them, they should not be destroyed. Such an act of destruction would be uneconomical. But in cases of this kind it is now possible to share that risk of accident with many other people, through some method of insurance, so that the entire loss will not fall on any given individual. To cut down the price on goods which have been so damaged to a low margin which represents the best estimate possible of their remaining value is a sound principle of business. Special sales of this character can be fully justified.

But it is claimed here that other kinds of sales cannot be justified as a policy. Season-end sales of style goods are a remnant of an older system. They have survived the time when the retailer bought rarely and in large amounts. Under this condition both the manufacturer and the retailer took heavy risks because of the uncertainty of sales during the half year or twelve months' period. With a better organization of the market, there

is to-day no such risk to be taken. The manufacturer can know his market more intimately, can keep in constant touch with all changes in the market, can make his manufacturing plans flexible so that they may be adjusted to these changes. The retailer also can keep in close touch both with the market and with the manufacturers. Quick delivery and quick sales lead to a minimum of risks. While the seasons may remain the same length as before, purchases may be made with far greater frequency. New styles may be tried out before large purchases are made. A much smaller amount of capital now is needed to finance the goods for the season. Under these circumstances, there should be no large amounts of season-end or mill-end goods. In other words, there is to-day every facility for making a far more careful adjustment of supply to demand.

Bargain sales as an established system must go. If the manufacturer or the merchant desires to reduce the price of his goods for advertising purposes, let him face this policy frankly. Let him, also, acknowledge that in buying goods at the beginning of the season with the conscious purpose of reducing them later means compelling the first buyers to pay more than the things are worth, in order that the last buyers may pay less than the things are worth without loss to the seller. It may be argued, to be sure, that the purchaser is willing to pay more because she has the satisfaction of choosing these goods while they still are unique and distinctive. The gratification of pride in this distinction may be cashed in on by the business man. Such a policy, however, is neither a wise nor an economic practice.

It is clear that the method by means of which the best adjustment between the supply of goods and the demand

for goods may be made is careful research. Once again there should be a careful study of the records within the establishment in order that the buying plans and the selling plans may work in as complete harmony as possible. No business is well organized until it is well balanced. An accurate adjustment of buying and selling can be obtained only from a comprehensive study of past experience as revealed in the records of the business.

Searching the Books. There is a large element of vagueness in the advice which says simply that one should study his own records. The business man may well ask the specific questions: What shall I look for in these records; what are the significant facts? These are the queries that need to be answered in a specified manner. It is not possible, however, to state any general principle that will be specific for every individual case. The essential facts in a given business can be determined only by a knowledge of the character of the business and of the conditions under which it operates. Facts that are vital and essential will frequently appear under different guises. Some simple principles, however, may be suggested that will serve as a guide in the analysis of one's own records.

Take, for example, once more the records of sales. Suppose that these records have been kept on the basis of territories or districts. If the firm is a large one and sells in large wholesale lots, the district may be a wide area. If it is a retail establishment, a district may mean a certain section of the city. Within these areas it is possible to go as far as the case demands in a general analysis of the situation. A clear idea should be gained from these records as to sales fluctuations and reasons for these fluctuations. The large progressive mail-order houses have experts who study crop conditions and the influences that

affect the financial standing of rural population in the various districts throughout the country. This would give them an idea of the general influences that control these sections. But they go much further than this. From their sales records they draw specific data regarding the individual purchasing. It is possible for them to concentrate on a single card the name, address, occupation, whether head of a family, the amount of goods purchased within the year, for every one who buys from them through the mail. With very little difficulty it is possible for these great retail establishments to identify quickly the sources of fluctuations in sales. On the basis of this knowledge it is likewise possible for them quickly to adjust their plans to meet new conditions.

The sales records, as has been pointed out above, may be analyzed from the point of view of the salesman. It has been a problem for some time as to how to determine a fair sales quota for each salesman. No doubt much injustice has been done by guesswork. The management has not had sufficient data as the background for intelligent control in this matter. Every salesman should, of course, stand upon his own record, but this record should be analyzed with due regard for all the influences that work upon the sales record. Frequently these factors are intangible and psychological; but, nevertheless, they will find expression in the books. The progressive manager will scrutinize these accounts for the purpose of securing the desired facts.

The record of sales should be examined also from another point of view. This is the character of the goods sold. It is well known that certain types of goods practically sell themselves. These are ordinary staple goods and carry a very narrow margin of profit, because they

are sure sales. It does not require a high type of salesmanship to get rid of these goods. There are other kinds of goods which are poorly adapted to the market in which they are being pushed. It is unfair to judge a salesman without a knowledge of this poor adjustment. The manufacturer or the merchant is first concerned with the sale of goods that carry the highest margin of profit. He wants the best effort of the salesmen concentrated on these lines. Careful analysis of the character of the goods handled should show the outlines of a reasonable sales quota under all the varying circumstances of trade. A more intelligent judgment on the part of the management will very often secure greater good will on the part of the salesman. This is true for all kinds of business.

The object in this general discussion has been to indicate some of the facts which now lie at hand for every manufacturer or merchant in the accounts which he must necessarily keep. He needs to be at very little expense to secure these vital and essential facts. Indeed, they have already been collected in many cases for another use. It remains only to adapt them to the purpose in hand. If these records of sales and of purchases are not kept in an intelligent manner then it is high time that some new principle be adopted by the business manager. It is a waste both of funds and of time to call in expert aid for the purposes of securing facts which may be made readily available from one's own records. Whatever new adjustment, therefore, that may be needed to make the sales and purchase records intelligent for the control of a business, should be immediately made, for it is not a difficult matter to do and the facts are of enough significance to justify the change.

Using One's Sales Forces. Another source of informa-

tion is also at hand for every manufacturer and merchant. He has his sales force which is in direct contact with the consumer demand. Such a force is analogous to the organization which has been developed by the large grain brokers and commission merchants in the grain-trading centers. These large grain dealers have organized a system of reports that cover the entire productive regions for grain throughout the period of growth of the crop. In all parts of this region there are men who have been trained in observing the crop conditions. Telegraphic reports come pouring into the central office of these grain dealers from these expert observers. The dealers instantly register in the market price whatever changes in crop prospects they learn from their expert investigators. The most progressive of these grain dealers plan to secure reliable information far enough in advance of all other people so that they may be able to trade intelligently on the basis of this superior knowledge. Some of these men get the crop news at least two weeks in advance of the Federal Government report. It is their immediate responsibility to see that these investigators are well trained for their task and that their reports are dependable.

Every manufacturer and merchant that has a sales force, either on the road or in the house, can use it as a source of valuable information. A salesman, wherever he is, represents the house that employs him. If the policy of the house is as it should be, then every salesman becomes a personal representative of the firm and will be eager to do what he can to promote the interest of that firm. It is to the interest of the firm to gain adequate and dependable information as to market conditions. In order that this sales organization may give the best results it is necessary that each salesman should be trained for the work.

Individuals differ greatly in their power of observation and in their ability to report facts. It is generally believed to-day that the information about the market, or trade conditions, that is derived from salesmen is unreliable. The salesman, it is said, is likely to be biased in his opinion. Generally he is temperamental. Many small things will affect his judgment materially. It is frequently difficult for him to generalize upon his experiences. A more fundamental difficulty is that when he is asked for information about the field which he himself covers, he is asked to pass judgment upon his own efforts. No man is presumed to be able to audit accurately his own accounts.

In spite of all these obstacles, however, the sales force may be trained to observe accurately and to report correctly many essential facts about market conditions. There are firms which require regular reports from their salesmen and from their district managers in regard to all changes in the market in those regions. It is the part of the one who analyzes the facts that come in from this source to eliminate from them the element of bias or prejudice which they contain. Once purged of these elements, the facts may be used without reserve. This principle holds true for traveling salesmen and for salesmen within the store. It is wise for every business manager to give a little instruction to his sales force in the matter of observing types of people, their habits, and the things which appeal to them most and their reaction to various appeals.

Not only can much valuable information be secured by this means, but the system also has a very considerable educational value. The more the salesman knows about his products, the more he is likely to be interested in them. The more he is interested in his product, the more interesting becomes the task which he has to perform. The best

results, of course, flow from intelligent interest of this sort. Some business managers have found it pays to bring their sales people together for the general purpose of creating interest in the task of selling. Sometimes the simplest elementary principles of psychology are added to the general instruction. This makes the sales force interested in the prospective customer as an individual. It establishes a new relationship between the two. Many desirable results have followed from experiments along this line.

Research Department. Another source of information for those manufacturers and merchants whose volume of business justifies such specialization is the research department. This is a new kind of department in business organization that has multiplied rapidly among the larger establishments. It is, of course, a new kind of specialization and can be justified only on the basis of results obtained. The effort in this department is concentrated on the collection and analysis of business facts connected with the particular firm. It may be a wholly independent department or it may be subordinate to the purchasing or to the sales department. In any case it should have a very large element of independence and should be free from any control that would tend to hamper its fair estimate of facts. It may be possible for the small manufacturer or merchant to select some one from the force who has the capacity and training to interpret business facts. It may be made a part of this individual's duty to examine the facts that come to hand and to interpret them in terms of business policy.

No department or individual in the business establishment is in greater need of coöperation than the head of the research department. It should be his primary duty to discover all possible sources of business facts within the

establishment and to secure from every other department whatever service it can perform for him. On the other side, it should be the duty of these departments to help in any way possible. Many business managers may be greatly surprised to find how many facts can be learned from one's own business in this manner. Unexpected data will appear from unexpected sources. If the proper machinery is set running to preserve, record, and analyze these facts, very excellent results may be had. Later on will appear a detailed discussion of the organization and equipment of a research department.

The chief aim of this discussion has been to press home the fact that every manufacturer and every merchant has at his command a business laboratory filled with material which he may use for research work. A little experimenting will quickly show the possibilities in this kind of an investigation. The main difficulty will likely be in interpreting these facts into terms of general, practicable principles. There is not a dearth of material; the shortage is in the capacity to use it. It will be inexpensive and it will fully repay any effort devoted to it to preserve, record, analyze, and interpret the facts gained from one's own business.

Governmental Sources of Business Information. Another source of business facts which may prove of great value to any one interested in commercial research is the reports made by the various departments of the United States Government. These reports may be had either on request or by the payment of a nominal charge. In the collection of such business data there is no control by any private concern or interest, and every effort is made to eliminate personal bias from the facts. Many errors, naturally, have crept into the government reports for the

very obvious reasons that the government method of doing things is on such a wholesale plan and is usually carried on by a great force of workers who cannot always be of the proper training and character. Adequate and individual supervision is almost never possible. Sometimes the surveys must be made with such great speed that an entirely untrained force must be used. In spite of all these weaknesses, the facts that have been accumulated, especially by the various departments in their special reports, are of very great use to business men. It is to be regretted that so few business men make all the use that is possible of this source of information.

The best known reports are probably those issued by the Department of Agriculture. Some of these come out at regular intervals and are up to date. Others are not published until the material is at least a year old. They have to do with all phases of farm conditions both as to production and as to marketing of farm products. There can be no question but that one of the fundamental factors in all kinds of business is the condition of farm crops. Facts in regard to the various crops may be had from the reports of this department. There is issued every month, usually on or about the eighth day, a report from the Bureau of Statistics, which is a part of the organization of the Department of Agriculture, giving the latest data concerning the condition of the various crops on the first of the month. These facts have been collected from the entire productive area through the crop experts in those regions. They are very carefully guarded until they are put on the telegraph wire and are open for everybody in the United States. By this method no individual is permitted to take advantage of the crop news secured by an organization that covers the entire United

States. Every business man should, of course, keep in touch with the information from this bureau. A large sum of money is annually expended in securing it and there is no reason why it should not be used to its fullest extent. No single firm can afford to pay \$225,000 every year in order to secure this information, but every firm can readily take advantage of this governmental expenditure and interpret the facts in the terms of his own business.

Another important factor in business of every sort is weather. A late, cold spring or a hot, dry summer or an early frost may mean profit or loss to thousands of business men. It is possible, frequently, also, to guard oneself against unseasonable weather if its approach is known in time. Here, again, the Department of Agriculture can be of great assistance. There are sent out daily reports of weather conditions throughout the United States. Warnings are also issued from the various weather bureaus before the changes in weather conditions. Every up-to-date business man should make all possible use of this material which is at hand.

Another part of the government service that may be of great benefit to business men is the Bureau of Markets and Rural Organization. The main purpose in the establishment of this bureau was to study the marketing problems connected with farm products. A great deal of attention has also been devoted to coöperative organizations. The results of investigations made in various parts of the country by the experts in this bureau have been published and may be had by any one who is interested. These reports frequently contain conclusions of the utmost importance for the business man. He should know of these reports and should make whatever use of them he may.

There is also the Department of Commerce whose main duty is, of course, to assist the man in business in every way possible. This department has published many bulletins which are of very great importance to business men. Recently studies were made of the costs of manufacture in several different textiles. These bulletins also contain a critical examination of the selling methods used to market these textiles. Information of this character and conclusions drawn from the mass of data assembled by these investigators should be used by every business man whose problems are in any way related to those of textiles. There is a series of bulletins called "The Special Agent Series," which deal very largely with questions of foreign trade but bear, also, upon domestic phases. Some of these pamphlets might be of great assistance to business men. Under the Department of Commerce there is the Bureau of Foreign and Domestic Commerce. Many reports have been issued by this bureau bearing upon various phases of foreign and domestic business problems. Any one of these pamphlets may be had for a very small price and most of them are well worth careful examination.

Another department of the Federal Government which should afford very valuable service to the business man is the Federal Trade Commission. The primary purpose of this commission is to investigate cases of unfair methods of competition. They have, however, a far broader outlook than this would indicate. Their work has led them into numerous investigations and the facts they have accumulated have, in a part, been published. These facts are available for any business man who wants them. The commission has been anxious to serve the business men of the country to the best of their ability. Members of the

commission have been chosen, in part, from those who have made a success in certain lines of business endeavor. The commission's aggressive policy has already made itself felt in many business circles. One phase of it is well known to-day; that is the effort to establish standard systems of accounting. As outlined by the recent chairmen of the commission, the activities are to be directed along three different lines. The first is to standardize the methods of keeping accounts; the second is to secure a greater degree of organization and afford greater helpfulness in all lines of trade, especially through the machinery of trade associations, and the third, to encourage foreign trade. (E. N. Hurley, "The Government's Plan to Help Non-Paying Industries Succeed," *Printer's Ink*, December 9, 1915, p. 97.) No business man can afford to reject the generous offer of coöperation made by this commission. Certainly, the progressive business man will keep in touch with the publications of this commission and will gain added information by addressing the commission directly.

The Department of Labor, which was formerly connected with the Department of Commerce, has also issued many bulletins which contain valuable business facts, particularly those that have to do with wholesale and retail prices. A splendid survey of the prices of various commodities in the large markets of the United States will be found in the bulletins of this department that are issued from time to time. These bulletins contain also a comprehensive analysis of business conditions that should prove helpful. A careful examination of these reports will repay all effort required.

There are several other departments whose work may be of service to the business man. There is, for example, the United States Geological Survey whose bulletins contain

the most authoritative facts on sources of raw materials. There is the Bureau of Mines that has been very active in investigations and has published its findings from time to time. The Bureau of Standards, also, has published the results of its work, some of which is of extreme importance. The Tariff Board is amassing a vast quantity of reliable data. All the departments of the Federal Government are interested in various phases of industrial and social life. The problems of the business man are frequently treated by experienced experts, and material is collected and analyzed in a way that the single business firm could not possibly do.

Probably the Census reports contain the greatest amount of information of direct service to all those who are interested in the question of commercial research. With all their errors, and they are many, these reports are invaluable. In some cases, the area covered by them is so large and the errors of such kind that they probably neutralize one another, so that the final results are not very far from the truth. Many of our greatest industries are discussed in these reports in minute detail. The amount of business done, growth and development of manufacturing, methods of sale, value of goods, and thousands of other topics are taken up in these reports. They should be of much greater service to the business man who is interested in research than they have been heretofore. Unless the plans now in mind fail, the reports of the future will contain much more information on commercial subjects than has been the case in the past. If this is true, the Census reports will have more vital interest to the general business man.

Merchandising Service Departments. A new kind of department has appeared in many large businesses

throughout the United States. The origin of this new work has been a realization of the fact that the individual business man needed a larger outlook than he was able to secure for himself. It was thought, therefore, to be an excellent source of good will if this wider opportunity could be offered without charge. In consequence, there has arisen what is called to-day the merchandising service department.

Many large banks, for example, have established these departments. The National City Bank of New York has a corps of workers whose duty it is to make careful research into the industrial and commercial problems connected with many commodities. These discussions are generally on timely topics which the business men are anxious to understand more fully. The Guaranty Trust Company of New York does the same kind of service. From time to time very valuable reports are sent out from this bank that are the result of careful research into live problems of business. The same is true of the Irving National Bank and the National Bank of Commerce in New York. The banker is in a peculiarly advantageous position in regard to this service. It is not, of course, to be assumed that he does it with any philanthropic motive. He knows full well that if he does this work acceptably he will receive in return sufficient good will and patronage to repay him for his expenditures. At the same time he himself becomes more conversant with trade conditions. Since he must serve as guide, philosopher, and friend to so many business managers, he feels keenly the need of this knowledge. It helps also directly in his business. Credit conditions reflect at once trade conditions, and he must have up-to-the-minute knowledge of these matters.

There have appeared recently, for example, some care-

fully written pamphlets having to do with the use of trade acceptances, problems connected with marketing of cotton, tobacco, and various other commodities. The banks which made these investigations, no doubt, have many men among their patrons whose business depends directly upon these great staple commodities. It is well for the banker, as well as for the business man, to know how things are going in these industries in order that they may both plan for the future more intelligently.

There are many firms who make it their special business to offer services of this kind. Nearly all the brokerage firms of consequence have an organization for collecting facts, such as no individual business man can afford. The grain brokers, for example, in the large market centers, are constantly in touch with experts throughout the production region and are advised by wire of every significant change. These brokers will, therefore, know before the business man can learn what the effect will be of the change in the grain crops of the country. These men, however, offer the facts which they gain in this manner quite freely to the public. It is their primary business function to make the most for themselves out of this superior knowledge. Nevertheless, they are generous in giving out the facts which they have gleaned. Every market center of staples has this type of dealer. It is true of cotton and wool. And, of course, it is well known that buyers and sellers of stocks and bonds accumulate a vast amount of material of this character. For the individual business man these are business facts; they will teach him more about the conditions under which he is striving to do business than he can learn at first hand for himself. It would be wise for every progressive manufacturer and merchant to keep in touch with materials of this sort.

A similar kind of research work has been taken up by certain large daily newspapers, and weekly and monthly periodicals. Their purpose evidently is to be able to give advice that is worth while to those who plan to advertise commodities among the people reached by these papers. There is nothing philanthropic in this work. It is a realization of the fact that a superior knowledge of market and trade conditions is a part of the service which these media have to sell. A notable example of this character of merchandising service is offered by the Chicago *Tribune*. A survey of the Chicago market was made by this paper in 1913. The entire city was laid out in districts very carefully selected, and these districts were covered by personal interviewers. The investigators carried with them a long questionnaire and went from house to house to get answers direct from those living in the district. It was not possible to visit every one in this vast market, but representative individuals were selected and interviewed. As a result of this survey, the Chicago *Tribune* now claims that it knows more about Chicago as a market than any other individual or firm. In order to keep this service up to date and immediately available for merchants and manufacturers who desire to advertise in this market, the paper has established what it calls "A Merchandise Service Department," and it is the duty of this department to answer all inquiries about the possibilities of advertising in the Chicago market. From time to time this department extends its survey and adds to the materials which it has on file. It claims to give absolutely unprejudiced information in answer to all inquiries.

A service of a similar character is offered by many other well-known papers. This is true of the leading newspapers in the larger cities and is extending to the

smaller towns. Even the farm papers are taking up this subject with seriousness. Among these latter a notable example is *Successful Farming*, which has devoted considerable attention to the subject of getting up-to-date, reliable information on the agricultural market.

It is probable, however, that the publisher who has gone farthest in this kind of work is the Curtis Publishing Company. This company established several years ago a commercial-research department, which was placed in charge of a very shrewd and careful investigator. From the humble beginnings of a desk in a corner of a room, this man has built the department up to broad proportions. From the very beginning he began to build along broad lines. His work has so justified itself in the eyes of the management that they have been willing to invest large sums in research work. It is possible for this company to carry on investigations on a national basis. They are not limited to local markets as are most newspapers. In the past six or seven years the research department of the Curtis Publishing Company has investigated with unusual thoroughness the marketing problems connected with farm implements, automobiles, farm tractors, food products, musical instruments, etc. Although the information secured by this national research work has been largely of a confidential character, the company has been very generous in permitting business men to benefit from its work.

These researches, however, have not been done without a practical purpose. This publisher was not seeking truth merely for truth's sake. He believes that his company should be in a position to tell the manufacturer or merchant what he wants to know about his business. The ideal seems to be to know more about the business than

the manager himself does. It is possible for this company to take a far broader and more impartial and impersonal point of view than any individual can. The outlook is that of an entire national market. The investigation usually covers the historical development, the present situation and the future prospects of the industry under consideration. With the material at hand, this publisher can demonstrate the possibilities of extending the bounds of the market for any individual. Unexploited regions can be outlined. The forces that have made for success or failure in any particular business can be identified. This kind of information is of inestimable value to the business manager. In so far as it is possible for him to use it, he should avail himself of the opportunity.

Trade Journals and Associations. Another source of information is to be found in the trade journals which have multiplied rapidly in recent years. About three thousand of these are in existence to-day. There is no line of goods of more than local importance that does not have some kind of a trade paper devoted especially to its interests. These papers are filled with items of news bearing upon various phases of the commercial problems connected with the marketing of goods. Some of them give very highly technical information; others are largely filled with news and gossip of the trade. There are, for example, almost a score of journals that deal with some phase of the iron and steel business. Any one interested who has the opportunity to read these journals carefully will be able to glean from their pages a vast amount of valuable information. The automobile business, also, has more than a dozen trade papers devoted to its interests. Some of these carry highly valuable information. There are likewise many trade papers having to do with textiles. In

so far as it is possible for any one whose interests touch the textile industry, he should keep in contact with the best of these trade papers.

A real mine of information is to be found in the commercial and financial papers. Some of these are published daily, some weekly. As examples of the best type of those that carry the most reliable information for any one interested in commercial research, are the *New York Journal of Commerce*, the *Commercial and Financial Chronicle*, *The Annalist*, *The Wall Street Journal*, *The Economic World*, etc. There are also special editions of the daily papers that frequently contain good business information. Access should be had by any one who is interested in research to papers of this character. Of a more general character are the economic journals that are published monthly or quarterly. Examples of this kind of journal are the *Quarterly Journal of Economics*, *The American Economic Review*, the *Journal of Political Economy*, etc. A large part of these journals is given over to a theoretical discussion of economic principles, but now and again they carry articles of considerable interest on certain phases of business problems. This source of information cannot be neglected.

In addition to these sources of information there are many others. Market news, for example, is issued by various associations from day to day, dealing with local conditions. Certain large wholesalers and retailers likewise publish open letters from time to time. There are, for example, the weekly letter of John V. Farrell, *Marshall Field's News Letter*, *Dun's Review*, etc. *Bradstreet's* and *Dun's Review* are devoted particularly to a survey of trade conditions. There are, too, the business magazines to which practical men contribute, either directly or by

interview, which frequently contain very suggestive material. Certain advertising agencies publish from time to time business information in illustration of the service which they perform.

In these later days there is appearing a new kind of organization which may prove of the greatest benefit to business men. This is the so-called trade association. It includes all commercial, industrial, and trade organizations whose purpose is the betterment of business. Of these there are about seven thousand in the United States. Chambers of Commerce, Commercial clubs, Boards of Trade, and other business organizations whose purpose is to promote the trade of a community, number approximately twenty-five hundred. There are one thousand manufacturing and mercantile associations of a general character. Of trade associations proper — that is, groups of men in a particular line of business — there are three thousand. It is the last named type of association that is fast increasing in importance. This association is entering into all fields of business endeavor. Some men make it their special business to organize and promote such organizations. In general, they are based upon some mutual interest, such as similarity of problems, or the fact that they handle the same commodities, or because they belong to related industries. These institutions are realizing the need of a more complete knowledge of business problems. There is, therefore, developing what is generally called the educational department. As a matter of fact this department is a research department in which are collected and analyzed the pertinent and essential facts of business along the particular lines in which the associations are interested. The special point to be emphasized is that these trade associations afford splendid machinery

for business research. Through their educational departments and by means of their annual conferences, they are fast educating themselves in better business methods. But much yet remains to be done. Their work is still far from being effectively organized. The possibilities of such associations are, however, obvious. Something more will be said later in detail about their organization and effort.

Reference Books. The libraries, both public and private, that are scattered so copiously throughout the country, are well stocked with all sorts of reference books. There are some people who spend all their time in trying to find out what others are doing, and they seem to enjoy this work. The result of their labor is to be found in large volumes that give excellent summaries of useful information. Any library of respectable size will also have a reference librarian who will be able to guide the inquirer to the most direct and economical medium of finding out the desired facts. This reference librarian is a very useful person to anybody who desires to utilize the library itself. In the past the business man has been extremely shy of this individual. He has thereby lost many hours of time and has failed to make use of free and competent service.

Among the reference books which the business investigator will need to consult the most obvious ones are encyclopedias and dictionaries, both general and specialized. There are the well-known general encyclopedias represented by the "Encyclopedia Britannica," and there are a number of geographical and technical encyclopedias. Some dictionaries, also, have extended the scope of their investigation beyond the mere definitions of words so as to include useful information about all sorts of subjects. Specialized encyclopedias and dictionaries are typified by

the "Cyclopedia of Agriculture" and the "Dictionary of Economics." There are, of course, many others both in English and in foreign language. In addition to these, the libraries contain year books dealing with particular countries like Russia, China, or Great Britain, and containing in summary and analytic form most useful information. Under this heading, also, will come the "Statesmen's Year Book," which is a familiar adjunct to the library. In the same class should be the *World Almanac*, which is a great compendium of information of all sorts of subjects.

There are other reference books of various character that may be used by the business investigator. One type is illustrated by "Thomas' Register." This volume is probably too expensive for the individual business man to own for himself and yet it may be consulted conveniently at the nearest library. Dun and Bradstreet are probably too well known to mention. There are, of course, various kinds of atlases which should be at hand and probably should be owned by the business man himself. Our new ventures into foreign trade have revealed an appalling ignorance of geography on the part of the American business man. Unfortunately this ignorance applies likewise to domestic trade. It will be wise, therefore, for every business investigator to make himself familiar with at least one good type of atlas.

Something further should be said on the subject of using the library. It was a generous thought in the mind of Mr. Carnegie when he decided to devote a substantial part of his wealth to the founding of libraries. It may be to-day that these libraries have become a burden on certain communities because they do not fulfill a definite need. But such institutions are founded not alone for carrying

the best sellers of the year or for the use of sentimental schoolgirls in their desire to read "gushing stories" of heroes and heroines, but also to carry technical and business books that may be of use in solving the serious problems of practical affairs. There is no doubt that technical and business departments would immediately grow in response to a demand of this character. It is really an inspiring sight to see the use to which certain technical and business libraries are being put to-day. A visit to such an institution as the John Crerar Library in Chicago will illustrate this assertion. People who go there go for serious purpose. The information is varied and is free. Such an institution becomes a public benefaction.

Miscellaneous Sources. In addition to the sources mentioned here, there are numerous others which may be used. Chance items, for example, come to the attention of every business man. These should be preserved for future use. They appear unexpectedly in the columns of newspapers and magazines and must be cared for at once or they are lost. There is, also, the telephone directory and the city directory; there are various kinds of business directories and there are such useful books as those represented by W. S. Thompson's "A Directory of Mailing Lists." The first part of this volume gives a list of books and pamphlets in which mailing lists are to be found. The second part is a classified index of the first part. All such miscellaneous sources as these should be known to and used by the business investigator.

Conclusion. This general survey of the sources of business facts has been made to give suggestions as to the available material for any business man who is interested in research work. It is a wise policy to make use of all the existing machinery which may be adapted to the service of

business analysis. Where such machinery exists there is no need to duplicate it by a new organization. Very few business men either realize or utilize the means of securing facts which lie near at hand.

It has been said that the beginning of business research is an attitude of mind. This means that the business man must be interested in experimenting and in observing the details of business as he finds them. Probably the most essential source of business knowledge is the experience and observation of the individual business man. Observe, experiment, and conclude are the three watchwords upon which modern experimental science has been based. Business as a science will need to use the very same principles. So that apart from these external sources of information which lie on every hand, the mind and eye of the investigator should be used to the fullest extent possible. Intelligent observation and thoughtful consideration are two corner stones of scientific research.

CHAPTER V

THE CHARACTER OF BUSINESS FACTS

Business facts and principles — Precise facts — Estimated values — Analysis of commodity — Trade organization — The market — Population statistics — Wealth statistics — Wages and prices — Per capita consumption — Incomes — Standards of living — Markets for special commodities — Direction of expenditure — Business habits — The will to buy — Potential markets — The effect of nationality — Miscellaneous factors — Conclusion.

While the aim of business research is to determine an intelligent policy, the subject matter is made up of business facts. These will come under various guises and frequently may escape attention unless one knows how to identify them and to use them. These facts may have meaning or not, according as they can be interpreted into terms of practice. They may be mere facts — that is, of no consequence — or they may be pertinent and essential. It is the ideal in commercial research to know all of the factors that influence one's business for good or for ill. It is proposed here to examine the character of business facts which the manager may use in analyzing his business problems.

Business Facts and Principles. It cannot be stressed too much that the object of research is more intelligent management. Immediate results are not always the best results nor are they always to be attained by analysis. Business that is worth doing, that is really worth giving one's best years and energy to developing, is the business

that is permanently founded. The foundations of such a business must be laid deep and strong and the policies of such a house must be sound and true. The wise business man builds for the future as well as for the present. Analysis will afford a keener insight and a clearer foresight for every business manager.

Business data are not of great value unless they are used. They can be used effectively and intelligently only when translated into workable principles and policies. It is a generally accepted saying that business follows a line of least resistance. This, however, is an empty phrase until it has been given a content of fact. Altogether too much business research, particularly as it finds expression in popular magazines, is made up merely of business gossip. There seems to be a definite editorial policy among these business journals that only the successful business ventures should be written up. Everybody knows, however, that one learns as much at least from his failures as from his successes. It is also probably true that the reasons for failure are more important than the explanation of a chance success. There has been much emphasis upon the romantic element in American business. Generally, business romance has meant a sudden, phenomenal success. Very often this success has been as unexpected as it has been sudden. The account of such a business may have good news value, but cannot have any very great permanent educational value. As a matter of fact, too much business writing has had to do merely with business gossip.

There is a vital distinction to be made between business news and business principles. The former is generally made up mostly of rumor and second-hand information. It is usually prefaced with the words, "I heard, etc." In

the courts hearsay testimony is disregarded. Such a principle would be of considerable advantage among business men. One may be interested to learn that his competitor across the street bought a consignment of goods that would not sell, or that he was able to clear out a lot of shopworn stock at good values. But such items as this are, after all, only the gossip of the street. They do not reach back to any fundamental or essential principles.

In the great grain exchanges there are certain machines that tick off news from day to day on broad strips of paper. Dealers on the exchange read with very great interest whatever appears on these ticker sheets. It is called, however, by the trade the "gossip of the pit." The reason for this is obvious to those who will read the news that comes in this manner. It is made up of reports from one point or another, of what such an expert has said as to crop conditions, rumors of drought, or pest, or calamity, news of rain in some productive area; but all of these facts are given to the public only after they have been censored by some brokerage firms who have traded on the superior knowledge which their experts have given them. In other words, all the news that comes through the channels of gossip into the pit has already been discounted in the market. Besides, only those things which the brokerage firm cares to have known by its competitors are permitted to reach the pit in this manner. Back of this gossip lies the machinery for collecting news, for analyzing and interpreting news, all the forces that make for an increase or decrease of price, the world-wide influences affecting the production of staple products. The gossip is merely the froth and foam on the surface and may not even indicate the direction of the world-wide current below. The same is true of business principles and business gossip. Dis-

jointed and disconnected business facts may be only like the gossip of the pit, interesting for the moment, but already discounted, used, and discarded.

This distinction between mere business facts and sound business principles may be made clear by an illustration. The claim has been made that the following is a sound principle of action for the business manager: "Persistent advertising can be maintained before more people at less cost in the street cars than in any other medium known to mankind." Such a statement can be arrived at safely only through a long and careful course of analysis of business facts. That such a study does lie behind the broad principles stated is obvious from what follows in the same discussion. Facts have been collected to show that 3,900,000 people ride daily in the street cars in the section under survey. That these facts are reliable is proved by their source. They are taken from the records of the Public Service Commissions who supervise the street-railway systems in the given section of country. The rate of charge for a street-car advertising card 11"x 21" enables the advertiser to put a card in every car in this region for about \$100.00 per day. "That is to say, it will cost you at the rate of something like \$1.00 to reach 3,900 people, or 1¢ to reach 390 people." There are many other facts that lie back of these assertions, likewise, but this is enough to illustrate the point. The business principle develops from business facts, provided that the business facts are pertinent to the question under consideration. All principles, all rules of action must grow out of individual facts. Careful, persistent accumulation of data is first necessary. This gathering of data should be followed by a process of sifting, analyzing, and interpreting.

It is only in this way that facts can be translated into terms of business practice and policy.

The beginning of all business analysis is, therefore, business data. They may be collected from many different sources, they may appear in many different forms, and they may be of varying importance. How shall one recognize the importance and significance of business data? He can do this only by an understanding of the character of business facts. In general, these facts will be of two sorts; there are, first, the precise facts that the records show, and, second, there are the estimated values which are of a much larger class, and are far more complicated. Data of this sort will have to do with all phases of business; but wherever they appear they will fall into one or the other of these groups.

Precise Facts. These facts may be defined as definite figures for definite units. For example, a merchant may sell fifty yards of cloth at one dollar per yard. These are precise facts in two different kinds of units. The yards represent the unit of measure or quantity, the dollars represent the unit of monetary value. Another item might give the amount of raw materials purchased in other kinds of units. For example, it might consist of one hundred bales of cotton at 25¢ per pound; but here, again, are the same precise facts in different units. Or a salesman might send in from the field an order for a certain amount of goods which he had sold. These, likewise, might appear in definite figures and would represent units of quantity or quality or monetary value.

So far as definite figures correspond to definite units, they are not difficult to deal with. One can find the sum total of orders for a definite period in any one of the units desired. This sum total will be as accurate as those who

deal with them are careful. It is possible to reach practically absolute accuracy so far as results are concerned. Facts of this kind are those which appear generally in the records of sales or of purchases. The business man, manufacturer or merchant, will have recorded in his books in actual figures the materials or the goods, and their prices, which he has bought and sold. The item given above of the number of people traveling daily in the street cars of New England represents an instance of precise facts. It is presumed that these have been carefully transcribed from the books of the Public Service Commissions. The warehouse man will have records which show the precise amount of goods stored in his warehouse, or the number of bushels of wheat in his elevator. These, also, are precise facts.

It may be said, in general, that business facts drawn from the ledger accounts are of this precise character. In so far as these facts are in themselves accurate, one can reach absolutely definite results. In other words, in dealing with facts of this kind the chief element to be considered is the personal element of those who transcribe them. There should be no need to insist on carefulness and accuracy in this regard. It is, of course, an elementary principle of business.

Estimated Values. The chief distinction, it is said, between general commercial accounts, which are an orderly arrangement of precise facts, and cost accounting, which is an attempt to analyze the expenses of a business, lies in the fact that the former deals with precise facts while the latter has to do with estimated values. In both cases, to be sure, definite figures are employed, but these figures have essentially different missions. A statement that fifty yards of cloth have been sold at one dollar per

yard is a definite record of a past transaction. There can be no change in that. When a manufacturer or a merchant, however, makes an inventory of his stock the question is a different one. In this inventory there may be an item which reads "Fifty yards of cloth," for which a definite amount of money per yard has been paid. So far the transaction runs on precise facts. But the conclusion that the goods are worth more than the amount paid for them or less than that amount is quite another matter. There is a constant process of deterioration even of goods that are of the most lasting and durable character. Depreciation is constantly going on. "Destruction is the law of nature," it has been well said. With certain exceptions, this is true of every kind of business. Nothing is exempt from this law of nature. Nothing can thwart it. "All machinery is on an irresistible march to the junk heap, and its progress, while it may be delayed, cannot be prevented by repairs." (Hatfield, "Modern Accounting," p. 121.)

Herein lies the essential difference between precise facts and estimated values. Behind the precise facts in the ledger lie these intangible and unexpressed judgments which are based upon many other things than numbers that appear on the page. It is with these estimated values that the business man has most constantly to deal. They do not by any means appear always as indicated above in the form of cost accounts. They frequently must be read between the lines of a general description. They are often merely implied in abstract statements. Nevertheless, they are there and it is the part of the one engaged in commercial research to discover them. In fact, a very large part of commercial research is occupied with this kind of analysis.

The results obtained from estimated values find expression in general principles and rules of action. There is nothing mysterious or extraordinary about the term "estimated value." Business men are making such estimates every day. In essence it means only that every business fact worth considering has surrounding it a meaning or a significance to which some weight must be given. For example, business facts are the evidence for future policy. The experience of to-day and of yesterday affords the basis for the action of to-morrow. The plan for to-morrow, therefore, results from an estimated value of the experience of the present and of the past. The merchant says that last season his sales were of such and such a character, and his purchases, therefore, for the coming season will be of such and such an amount. Now, the sales for last season are precise facts, the possible sales for the coming season are estimated values.

The business manager must make his judgment go beyond his experience. In doing this, he is entering at once the realm of estimated values. A certain customer he considers as typical of a group. This, again, is an instance of estimated value. Whenever a figure is representative it means that it is permeated with this element of estimated value. A manufacturer, for instance, has calculated for every district in the United States the number of sales per capita that should be made year after year. These, of course, are estimated values. Or, take again the figures published by the United Cigar Stores Company dealing with the annual consumption in various large cities throughout the country. The manager of this concern declares that the consumption of cigars per capita for New York City is \$1.74 per year, for Chicago 63¢, for St. Louis \$1.21, for San Francisco \$4.60, for Milwaukee

22¢, for Atlantic City \$2.55. These figures are doubtless obtained by dividing the number of cigars sold by the number of population. If, however, a sales plan is based upon such facts as this, there will be another case of estimated value.

Data of such character are often abstract. They have to do with intangible and psychological factors. Most of the facts concerning human beings are of an estimated character. Take, for instance, the generalization, "If people are not instantly won to a brand, they are also very hard to wean away from a brand." Such a declaration is, of course, only an estimate. Probably it cannot be called more than a mere human tendency. It is not based upon precise facts or probably even on definitely estimated values. It is a judgment of human character. But of such things as this are business principles made.

It is well worth while to keep this distinction between precise facts and estimated values in mind. Carefulness and accuracy should characterize the dealing with both of these kinds of facts. It cannot be hoped, however, to reach the degree of accuracy in estimated values that can be readily secured in precise data. Furthermore, these latter should be secured, because the broader the basis in precise facts, the stronger the structure based upon them. Estimated values are often little more than hypotheses; that is, rules to experiment with. Such principles have been of very great value in the physical sciences and may well be carried over into business science. But it must be remembered that these experimental principles are finally decided by precise facts. Possibly, estimated values may be defined as facts translated into judgment.

Business facts, like a chameleon, assume the color and characteristics of their environment. Those that have to

do with one phase of business will have the appearance characteristic of that phase. There will be in them, also, the weaknesses and the strength of that particular activity. It may be said, in general, that business facts can be classified on the basis of fundamental, commercial relationships. Commodities are carried to market for the purpose of sale. Whatever has to do, therefore, with their commercial value is essential to business research. Data of this sort can be classified under three main topics. There will be the facts that have to do with the commodity itself. This commodity must be carried to market by some kind of trade organization. This, therefore, is the second chief topic for consideration. But the purpose of economic activity is to satisfy human wants. It is the consumer demand that largely directs business activity. The third chief topic, therefore, is the market.

Analysis of Commodity. Commodities are of two general classes, raw materials and finished products. A study of raw materials will lead one into the facts that have to do with the character of the productive regions. There will be, for instance, the geographical location of the producing regions, the characteristics of these regions, as to size, climate, fertility, methods of producing the materials, figures to show tendency toward increase or decrease, actual amount produced for a number of years, the value of the product, fluctuations in price, and all such general data as these. There will also be the analysis of the commodity as a thing in itself. Facts will be secured as to the size of the units of this commodity. For instance, cotton has a bale for its unit, wool is sold by the pound, ore may be priced by the ton as is coal, apples may be sold by the barrel, other fruit by the crate. In every case one must know the facts about the units of commerce.

Inquiries, also, should be made as to whether the commodity is perishable or non-perishable, whether it is seasonal or steady in supply, whether it requires preparation for market, whether it is an independent commodity, or whether it belongs with a group, and what its general relation is to other products. A careful study should be made, of course, of varieties, species, and grades of the commodity. Many of these will be technical facts, but they are nevertheless essential for a full understanding of commercial problems.

In the case of manufactured goods, the kind of facts needed will be somewhat similar in character to those of raw materials. One of the first steps in a thorough analysis of business problems is an historical survey of the business. One should know something about the early uses of the commodity, what changes have developed in recent years, in order that he may understand the present situation. It is on the basis of such knowledge that the business manager plans for the future. Then, too, one should be thoroughly familiar with all the characteristics of the product. There is, further, a study of the uses to which this product is put. What is the character of the demand for it? Is this demand developed, undeveloped, or possibly overdeveloped? Is it a necessity or a luxury? Is the demand for it a continuous one, or a seasonal one? Such questions as these need complete answers and will require an accumulation of business facts. The progressive business manager will desire to know, also, the possibilities of technical or scientific analysis of his commodity. This is especially essential in all food products. There is, again, the style element as a commercial factor in the marketing of the finished products. These points, however, will illustrate sufficiently the character of the data

which will be needed for a complete analysis of the product as an object of commerce.

Trade Organization. Every commodity must have an organization to carry it over from its source to the market. Business analysis demands that this trade organization be studied part by part. It must be kept in mind clearly, of course, that a trade organization is not a permanent, unchangeable thing and that the existing organization is not the best or the worst possible one, but is an attempt to do a required service effectively. It is the business of commercial research to inquire whether the services performed by middlemen are real services, what the nature of the services really is, what reward is paid for them, and what defects are apparent in the mechanism that has developed to aid in distribution. Data must be had on all parts of this trade organization. A single example will suffice to illustrate the point. Take the matter of market and trade news. Every business manager understands well that much of his information must come to him at second hand. It is his duty to know whether this information about the market and about the quantity of commodities for sale is reliable or not. In order to determine this, he must know thoroughly the source of facts, whether there is a bias in them or not, who has controlled them, whether any private or selfish interest has colored them. Analysis of this sort is absolutely essential for intelligent business management.

There are to-day many very perplexing problems arising in connection with the trade organization. Some have said that the situation is chaotic. There is the subject of the new type of retailer as illustrated by the department store, the chain store, and the mail-order house. What is to be the future of these institutions? What is their

weakness and what their strength? What are the forces disrupting the old organization? Toward what new forms are we tending? What new influences are at work and with what effect? These are pertinent questions for the business manager to ask. His policies will be molded by his interpretation of these facts. Intelligent foresight demands that business policies be adapted to shifting conditions. Such adaptation is possible only by a thorough knowledge of facts.

The Market. The market for any commodity is made up of the people who desire it. In its broadest sense market means a demand for a commodity, or, in economic terms, effective demand; that is, a demand with a compelling force of purchasing power behind it. In other words, the market is a chance to sell. The term may refer to a definite region or to a commercial area within which the buyers deal. Manufacturing establishments are concentrated in the cities and hence the market for raw materials which they use are the cities. The surplus foodstuffs from the farms move toward the centers of population, so that the larger the centers, the greater the market. In most cases, however, certain centers are highly specialized markets, are concentration points. Some explanation must be sought for the fact that while the crude ore of aluminum is mined only in one section in Arkansas, the smelting center is St. Louis and the purifying centers are in New York State, while the factories for making aluminum ware are scattered through half a dozen states. For a clear understanding of the marketing of copper, reasons must be found for the fact that the bulk of the supply comes from mines in Western United States, but that the world price has until recent years been determined in Bremen, Germany. Why should, also, Elgin become a

great market for butter and the center of watchmaking? Those business men who are interested in commodities of this kind must accumulate the facts for an explanation of the existing situation.

Commercial demand is oblivious of state and national boundaries. If such a demand were charted, political lines would be crossed and recrossed. These commercial areas run riotously across state lines, county lines, and physical obstacles, and yet there must be somewhere some clear and reasonable explanation for such things. The analysis, of course, runs back at last to the elemental fact that demand emanates from man and that man is a bundle of habits, whims, fancies, prejudices, taste, willfulness, and vagaries. Upon such an unstable foundation every market rests. Amidst all these fluctuations, however, there is some constancy; some rules, some principles are there. There are primary needs which must be met. There are staples to be marketed as well as style goods. A final point should be kept in mind; demand is a demand for something of a particular kind at a particular time and in a certain quantity. Any shift in this demand will be reflected in the commodity to satisfy it. It is, therefore, impossible to study the characteristics of a commodity wholly apart from the demand. There is a continued interaction between the commodity and this market. One cannot logically be analyzed independent of the other. From this exposition it will be seen that most of the facts used in commercial analysis deal finally with people. This is generally called analysis of the market. It means a study of the number of people in a commercial area, together with their habits of living and buying, their purchasing power, and their general attitude toward goods.

In other words, it is the study of the population from the point of view of commercial opportunities.

Population Statistics. A great deal of study has been given to the facts pertaining to population in the United States. There has been, for instance, the series of census reports covering different phases of this very large and complicated subject. Many people who have been interested in social problems have tabulated the facts about various kinds of people in various kinds of units. Nearly all of these studies, however, are social studies and not economic analyses. They have looked toward the solution of certain social problems rather than toward the selling of commodities. This does not mean that they are of any less importance or value than other studies which may be made. It means that the data thus accumulated can be only incidentally of use to the business manager. There is, nevertheless, much material worth his study in these reports.

What, after all, does one want to know about the market and about the people who compose it? "A market," it has been said, "is nothing more or less than a group of purchasers regularly seeking the same type of goods." (Mahin, "Advertising," p. 17.) Obviously, then, the primary purpose in a study of the market is to identify this group of purchasers for a given product or line of goods. In order that this group may be identified various kinds of facts must be secured. The problem in some cases is far more complicated than in others. For example, certain commodities have definite limitations to their demand. The maker of machine tools understands clearly that his market is limited to those manufacturers who have established plants requiring his particular kind of machine.

The maker of cream separators knows that his demand is limited to those engaged in dairying. The sellers of specialties, likewise, have a limited market often very clearly set apart from the great mass of population. It is in regard to those goods for which the demand is elastic and wide in area that the great difficulty arises in discovering the essential facts. In regard to this last group of commodities the character of facts bearing on the market will be analyzed.

One of the first steps in the analysis of the market is to secure the facts about the number of people within a given commercial area. The demand will arise from these individuals. It may, in fact, vary directly with their number. In almost every case the number of people and the amount of demand will have some direct relation. Standing alone, however, the mere number of individuals is not of any great significance.

What is of far greater importance is the character of the people residing within this demand area. The general studies that have been made of the population in the United States have classified people on the basis of economic status, of race, and of the size of the family. These three units are all of value to the one engaged in commercial research. It will be remembered that the market was defined as effective demand; that is, a demand that is backed up by purchasing power. It is from this point of view that the economic status of the people in the market area becomes of chief importance. For the United States, especially, the study of racial differences, as these differences affect buying habits, is of very great value. Probably the unit which is most used in the analysis of a population is the family. This, also, as will be shown later, is of great interest to the business manager.

In all of these cases a large part of the facts are precise facts, and the rest estimates or estimated values. It is easy enough to count the individuals within a given group provided that group is clearly defined, so that every number stands as a representative of a human being. It is possible to know the population of practically any geographical division in the United States. The figures of this kind, however, are accurate only for the moment when the analysis was made. One needs merely to visit the railway stations in the cities of the United States to see how restless a population there is here, and how it is shifting from day to day to different parts of the country. This shifting makes, of course, for increased estimated values even in population statistics.

The study of population merely to discover the number of people is very superficial. There are so many influences to determine the direction of purchasing power of so much greater importance than this and so much more difficult to ascertain that population statistics, as such, are but the first step in market analysis. Far more important than mere enumeration of individuals or of families, to the merchant or to the manufacturer, is a knowledge of the way in which they live, what they buy to eat and to wear, what recreations they have, and all those intimate details of social life which are the index to buying habits. "The demand for any article varies according to purchasing power, living conditions, occupations, racial characteristics, climatic conditions, and numerous other influences affecting the different classes of customers." Data in regard to these items can almost never be precise. They are estimates, calculations, and altogether too often merely shrewd guesses. It is a new field for the business manager to attempt an analysis of these more or less in-

tangible factors that affect his business. Attention will here be called to the character of the facts bearing upon some of these phases.

Wealth Statistics. The term "wealth" in this sense generally means the ability to buy. The constant endeavor is to translate this ability to buy into terms of dollars and cents as it affects any given business. There have been from time to time many studies made into the subject of our nation's wealth. Here, too, the desire was to know whether or not the wealth of the country was being concentrated in the hands of a few individuals, while the great mass of people were growing relatively poorer. That is to say, the purpose has generally been to analyze this question from the social point of view. There are to-day no satisfactory statistics on the subject. The United States Government has published rough estimates under the title of *Wealth Statistics*, but even in doing so has apologized for their unreliability. In any case, some progress has been made in this direction, and a basis has been laid for a more dependable analysis in the years to come.

The analysis of the nation's wealth has usually been divided into three general divisions. One of these has been called the *Division of Agriculture* which contains the value of products, the value of the farm lands, mortgage indebtedness, and other items of a like character. The second general division has been termed *Manufactures*. These data have had to do with the value of raw materials and the value of finished products. There has been also a description of the character of these products and the concentration of their manufacture. The third group of facts treats with mines and quarries. This analysis also has dealt with the value of the mines, the

value of the products from them, and has given some estimate of the difference between the value of raw materials in the ground and their value when ready for use.

There are other facts in the census reports which deal with certain phases of the wealth question. There are, for instance, estimates of wealth, indebtedness, and amount of taxation in the country. The same reports attempt to enumerate the various forms of wealth and give estimated values of these various forms. There are, for instance, figures that apply to real property, to personal property, and to public property. Another section in the census reports gives "the estimated true value of all property and of specified classes of property." These facts are ranged on the basis of geographical and political divisions of the country. There is to be found here, also, an historical discussion as to the growth of wealth by geographic divisions and by states. One entire section of the report is given to manufactures. This section contains a description of 264 individual industries with the principal statistics for each. These figures include the number of establishments, the number of wage earners, the amount of wages paid, the value of the products, and the value added by manufacture. At the end there is a summary of all these figures for the country as a whole.

The figures that apply to economic status are generally reduced to a per capita basis. This means that the total amount in dollars and cents is divided by the number of people within a district. Obviously these results can have little direct value unless the distribution of the wealth among the people is also known. There is so much error in the statistics on this subject to-day that the records are only of small service to the one engaged in commercial research. They are, of course, much better than nothing

at all, yet when used they must be used with great care.

Wages and Prices. In connection with the subject of purchasing power, there are the figures that deal with the average wages and prices. It is possible to find from the population records of the Federal Government the average wages in certain districts throughout the country. The state of Massachusetts, also, has published a great many statistics on this subject. Other states, likewise, through their labor bureaus are accumulating data which can be used by any business man interested. The United States Bureau of the Census publishes such statistics covering the entire country. The Department of Commerce through the Bureau of Foreign and Domestic Commerce issues from time to time some facts bearing on this same subject. From this source every year there comes a volume of the statistical abstract of the United States. This volume contains statistics that deal with the area, natural resources, and population of the country, with agriculture, forestry, fisheries, manufacturing, mining, occupations, wages, prices, estimates of consumption, and the amount of business carried on through foreign commerce, bank activities, questions of public finance and of transportation. It is an almost inexhaustible source of general material. There is issued, also, by the Bureau of Labor Statistics a series of bulletins containing facts in this connection of interest to all manufacturers and merchants. These bulletins deal with such subjects as wholesale and retail prices, wages and hours of labor in such industries as iron and steel, cotton, wool, silk, men's clothing, wheat, flour, butter, etc. Outside of the regular sources there are some miscellaneous studies that have been made by this bureau dealing with the hosiery industry, women's knit-goods industry, etc.

There is, of course, some relationship between the wages paid to laboring men in any given district and the possibility of selling goods within the same area. This relationship, however, is not a direct one. Nor are the figures immediately available for the basis of a sales plan. Nevertheless they cannot be neglected. The same is true with prices. Demand will vary with some relation to variations in price. Here, again, however, the relation is not a direct one. Average wages and average prices may or may not be representative. This will depend upon many other factors. In a given industry, for example, there may be many highly skilled workmen who receive a very high wage. These, however, may be relatively few in number compared with the mass of unskilled workmen whose rate of wages is relatively low. One cannot stop, therefore, with merely an average wage; he must go further to find out how wages are distributed within the group. The same principle holds true for prices. In some years the prices of certain commodities are abnormally high or abnormally low, and therefore make the average unrepresentative. It is with data of this sort, however, that the business manager must deal. Some use can be made of them. No matter how incidental the facts may be, no matter how much a by-product of investigation, commercial research may use them for its own particular purpose.

Per Capita Consumption. Some estimates have been made as to how much individuals consume on the average. Statistics of this sort may be wholly misleading or may be the essential data which the business manager requires. It is said, for instance, that "people eat about eighty-five pounds of sugar per year,—and experts say that country families probably use more sugar per capita than

city people. This means that somewhere around 405,000,000 pounds of sugar are each year used by our folks alone." Or, again, it is said that over 45,000,000 pairs of first-class stockings are required by a certain group, 90,000,000 cakes of yeast a year, 4,500,000 barrels of flour, 45,000,000 pounds of coffee, 6,600,000 tooth-brushes and 12,800,000 tubes of tooth paste, 8,000,000 bars of chocolate, 120,000,000 cakes of soap. These are, of course, mere estimates and are not in any sense precise facts. Some of them are declared frankly to be the calculation of experts, others are given as actual figures. Or, take again, another estimated market, that of a newspaper with a circulation of 357,689. It is calculated that this market will absorb annually for washing and cleaning purposes alone about 2,000,000 bottles of ammonia, 178,000 carpet sweepers, 1,430,000 brooms, 357,000 mops, 9,942,000 packages of washing powder, 89,000 wringers, 89,000 washing machines, and 1,788,000 cakes of scouring soap.

There can be undoubtedly some valuable suggestions found in groups of figures such as those given above. Nevertheless, they must all be taken with some discount. On the whole it is doubtful whether this is the proper method of approaching the essential facts which the business manager must have. Too often these large sums have been calculated from insufficient data. Such, however, are the business facts in their character as they appear to the research student. He must use them as best he can. One thing which he must keep in mind is that it is a fatal blunder either to be deceived himself or to attempt to deceive others by an over- or under-estimate. Miscalculations will surely, like chickens, come home to roost.

Incomes. The basis of economic status is, of course, the income. This may be a single income of an individual or the combined income of some group unit like the family. The status of the group will depend upon the total income available for purchasing goods. If one can know this total it is possible for him to determine the purchasing power absolutely as a whole. There will then remain the difficult task of calculating how much of the whole will be expended for any given product. As a matter of fact, income is of consequence only as it applies to a given commodity. Take, for example, the possible market for automobiles. "Manifestly the possible sales of a \$5,000 automobile in a city of 30,000 in which only 20 men earn \$3,000 a year or over, as in certain mill towns, is not directly comparable with the possible sales in a town of 30,000 of purely residential character where 3,000 men may earn average salaries in excess of \$3,000. Substitute overalls for \$5,000 automobiles and the market possibilities are at once reversed. The common failure with, and disgust at, attempts to put down in dollars and cents the possible buying capacity of named territories is usually traceable to a neglect of this very factor of the 'nature of the town.'" (*System*, January, 1917, p. 54.)

The first question to ask in an analysis of this phase of the market is — what is an income? Of course, only the actual income really counts. Men do not spend money from average wages, nor can the amount available for purchase be determined by a knowledge of the daily or monthly returns, because there are many other factors which will affect the total amount. Incomes will be modified by the character of occupation. The work may be seasonal, intermittent, or of an irregular character. Men who work out of doors exposed to the weather cannot, of

course, have as steady an income as those who work in sheltered places. There has always been a very great difficulty in learning with accuracy the total income of any individual or group. Certain tests, however, have been applied from time to time. It may be worth while to mention some of these.

A widely accepted principle in the cities as a means of best showing the wealth or purchasing power in any given district is the amount of rent paid. An analysis was made of certain sections in one of our large cities and the returns were generalized in this manner: "The rents in the western half of this section are low, approximating \$30. Toward the east there is a marked difference. Many stone houses and elegant apartments have lately been erected, ranging up to \$200, but the average for this section is about \$90. Wealth becomes more apparent as Grand Boulevard is approached." ("Winning a Great Market on Facts," p. 26.) On the basis of this summary judgment was made as to the income and general purchasing power in this given district.

The difficulties in securing accurate tax returns reveal the trait of human character which makes all calculations of wealth distribution unreliable. In a case of this kind it is the indirect evidence that is frequently most valuable. Courts of law lay considerable stress upon undesigned testimony, believing that in this kind of evidence all personal bias has been eliminated. Some years ago a book appeared on the subject, "The Present Distribution of Wealth in the United States" by Dr. C. B. Spahr, the material for which was largely secured from government reports, supplemented by careful investigation of the Probate Court records in New York State. Under a state law all inheritances of \$5,000 and above must pass

through the records of the court. It was thus possible to secure facts which were not available from any other sources. No doubt the movement for income and inheritance taxes throughout the United States will afford a considerable amount of material for a study of incomes.

Several books have been written on the subject of incomes among various classes of people in the country. One of these had to do with the study of expenditures in New York City among the working classes. (R. C. Chapin, "Standards of Living in New York City.") Others have dealt with the problem more generally for the United States. (Nearing, "Wages in the United States," F. H. Streightoff, "Standards of Living Among the Industrial People of America, Distribution of Incomes in the United States.") A very excellent report appeared in 1902 by D. R. Dewey, commonly known as the "Dewey Report," which was compiled from the pay rolls of various employers and was later carefully analyzed by a statistician and made available for general use. Some states, also, are collecting data particularly on wage incomes among the working people within their jurisdiction. The most notable of these studies have been made by the Labor Bureaus of Massachusetts, New Jersey, Kansas, and Iowa. Illinois, also, has collected a large amount of data bearing on the general wealth situation. Some of these point incidentally to the size of the income of individuals and families.

So far the material bearing on the subject of incomes is of an unsatisfactory character. The Department of Agriculture has issued several bulletins dealing with the farmer's income, but the material has come too largely from the unreliable wealth statistics of the census reports. Recently, however, some very excellent investigations have

been made in certain farming districts. These cannot yet be called representative. They are, nevertheless, well worth careful study by one engaged in commercial research. Other studies, such as those made by the United States Children's Bureau, contain many interesting facts in regard to family incomes in certain manufacturing centers. The most that can be hoped for, however, is to secure a general estimate of conditions. This lack of material should not be lamented so much, because incomes bear only indirectly upon potential markets. There are many other things of almost equal importance to be considered.

Standards of Living. A great deal has been written about the rising standard of living among the people of the United States. This phrase has only a general and vague meaning. Nobody knows what a standard of living really is. Probably to most people a rise in the standard of living means that the individual or family group has more money to spend. This may or may not mean that the individual or family is better off economically than before. All income is a relative matter. There may be a nominal increase where more money becomes available for expenditure, but at the same time the prices of commodities rise in proportion with the increase of funds. The thing that really counts for increased purchasing power is that there shall be an increase in real income. This would mean that a larger amount of purchasing power is made available for the individual or family over and above any increase in prices of commodities.

There are many things that go to make up an individual's standard of living. This may be merely a matter of temperament. There are those who will have certain

comforts of life at whatever expense or sacrifice in other matters. Every one is familiar with that type of individual who still clings to all the forms of a past life of plenty and leisure after his funds are depleted. In some respects his standard of living has not changed with a decrease of purchasing power. Environment is also a part of the standard of living. Some people will pay for a certain kind of "atmosphere" in which to live. Tradition also is an element in the standard of living. Many of our values have come down to us by inheritance. Certain groups lay more stress upon certain products than others. There is, of course, in every social group the sense of fitness which influences the individual in his purchases. There can be no definite or reliable data dealing with such an indefinable and intangible thing as the standard of living.

There is much yet to be done in the way of collecting facts on the subject of distribution of wealth or purchasing power. Investigations that have been made by public and private enterprise, while worthy in character, have not been sufficiently comprehensive or scientific to prove satisfactory. The hope has been expressed that the Federal Government will take up this question and will make available the machinery for the accumulation of data that will furnish the basis for a comprehensive and thorough discussion of this general subject of wealth statistics. Meanwhile the manufacturer and the merchant can learn very much from the present available material. No one should be discouraged by the fact that this material was collected for a different purpose. Indeed, it may prove all the more valuable for the very reason that it was not collected for an immediate commercial purpose. That it is desirable to know the general distribution of wealth

throughout the country and particularly the purchasing power of districts or communities under special investigation is obvious. This is the first kind of knowledge to be sought in commercial research.

Markets for Special Commodities. As has been said, business facts will be affected by the character of the commodity under consideration. The same holds true for market analysis. Those facts that have to do with the actual and potential demand for a definite commodity are the ones to be sought in any particular investigation. Sometimes there is a very definite, clearly defined market for a given product. Take, for an example, the case of the electric iron. This is a household utensil which demands a certain equipment in the home. Unless the house is wired for electricity and attachments are available, there is no possible market for this electric appliance. In studying the market, then, for this commodity, the beginning of the investigation will be found in the facts dealing with the extension of the electric-light plant. Barring all other considerations the number of houses served with the electric current will afford the potential market for this commodity.

There are, also, those goods which have a very definitely limited demand. One would not expect to sell more than one washing machine to a family establishment. There are other commodities whose demand is affected by forces quite apart from the product itself. There is the case of steam excavators. A study of the commercial problems connected with this machine reveals the fact that the demand for it is very greatly affected by general trade conditions throughout the country. The influence is two or three points removed from the actual machine itself, but is nevertheless most powerful. Steam excavators are

used largely in public improvements where trenches are to be dug for drainage or for putting in a sewage system, or other conduits under streets. These projects must be financed by the sale of bonds of municipalities or other political units. If trade conditions are bad and money is hard to get, such improvements will be postponed to a more convenient season. The market for public bonds, therefore, is the barometer of the market for steam excavators for such purposes as these.

Other connections in the market are even more far reaching than this. It has been said that the market for silver depends to a substantial extent upon the climatic conditions of India. The reasoning in this case runs about as follows: India offers a great open market for silver both for the purpose of coining the standard Indian money, the rupee, and for personal ornaments. Both of these demands, however, fluctuate with the purchasing power of the people. In its turn this purchasing power depends upon the amount of surplus products for sale as exports, and lastly, the surplus products depend upon the climatic, seasonal conditions throughout the country. Or, take a case nearer home. There are the large bakers in the American cities whose duty it is from day to day to foresee the fluctuating demand for bread. It is said that these men are able to determine to an almost uncanny degree of accuracy what the demand for loaves of bread will be within the next forty-eight hours. The factors that enter into their calculation are weather, temperature, social events, and many other less tangible influences.

An interesting incidence of such far-reaching influence was revealed by the war conditions. American experts on the battlefields of France received daily by cable an ac-

curate account of weather conditions in the United States. Upon the basis of these reports and those received from other regions of the world the commanders of the allied armies were able to plan their artillery and aeroplane manœuvres for a considerable period in advance. It is argued that the weather conditions in the United States will predetermine the weather conditions in Europe two or three days hence. Such influences as these are analogous to market influences. Investigations should isolate such factors and evaluate their effect.

In securing facts about the market it must be kept in mind that these facts are of no value except for use in more intelligent business management. Generally business data will have a meaning for a special use. It is the duty of the one engaged in research to select the proper data for this special purpose. Every commodity, for example, has its special market. The facts that are made available should bear upon this particular market demand.

Direction of Expenditure. Sum totals of expenditures are not intelligible for business management unless these totals have been broken up into portions small enough and definite enough to reveal the direction which the expenditures take. Many studies have been made bearing upon the question of the family budget. These investigations have had as their primary purpose to discover what portion of the entire purchasing power is directed toward the necessities of life, toward luxuries, education, amusement, and so on. Attempts have been made to find what percentage of expenditure is devoted to rent, fuel and light, clothing, food and sundries. A considerable amount of material has been collected by the Massachusetts Commission appointed to study the cost of living in that state.

The following summary is taken from their report of 1910: "It would be safe to deduce from these tables a few generalizations about the expenditure of the income of a working man's family under normal conditions. For weekly incomes of from \$12.00 to \$18.00 the income would usually be spent as follows: Rent, 18% to 20%; fuel and light, 5%; Clothing, 14%; Food, 43% to 45%; Sundries 15% to 17%. This analysis may not actually fit the expenditures of many families, but it would probably be found that normal families with incomes of the amounts stated tend to approach these figures."

Most of these investigations into the direction of expenditure are based upon a slight structure of precise facts. They are generally very broad generalizations from meager data. As an example of such business facts the following quotation is given: "A table of annual expenditures on luxuries in this country has been put forth by Dr. Charles W. Eliot. Like everything coming from him, it is worth thought. Here are some of the items:

Tobacco	\$1,200,000,000
Jewelry and plate.....	800,000,000
Confectionery	200,000,000
Tea and coffee	100,000,000
Chewing gum	13,000,000
Intoxicating liquors	2,200,000,000

We might be giving more, but the typewriter on which we were recording these figures developed paralysis while writing the sum spent on booze." (*Collier's Weekly*.)

Facts of the kind illustrated by the above examples, no matter how many small errors they may contain, are nevertheless of importance in showing tendencies. Most economic laws cannot go farther than the demonstration of a general tendency. In market analysis, it is the broad

influence that counts in the long run. For instance, the manufacturer to-day must take into consideration the nation-wide movement for prohibition. What will be the effect of this movement upon his industry? Experience has shown that in many localities where consumption of liquor has decreased, the demand for candy and chewing gum has increased. What other effects are brought about by such a radical movement? In identifying the influences of such movement, the study of the direction of expenditure, the construction of family budgets, and any other facts which show buying tendencies will be of service.

Business Habits. Quite apart from the actual possession of purchasing power is the subject of how that purchasing power will be exerted. One avenue to this kind of knowledge is through the study of business habits in any given community. The manufacturer and merchant know that there is a very important element of passiveness or inertia in every market. They understand very clearly in these days that men in their buying habits are in one respect like sheep: they follow certain leaders. This is generally expressed by saying that every market follows certain trade leaders. The great mass of people do not make up their minds for themselves, independently, but either consciously or unconsciously imitate those who hold a position of prominence and leadership in the community. One object in market investigations should be to identify these "pivotal men," who set the standards for their group. A study of these trade leaders who fix the method of buying in any community will reduce the expenses of the investigation and secure the vital and essential facts which show the direction which expenditure is taking. These facts should enable the manufacturer or merchant to adapt his goods and commercial practices

most advantageously to the habits of that group. It is important to know, for example, whether the typical buyer in a neighborhood makes his purchases in bulk or package goods, and why? It is possible, of course, through years of training, and by a large expenditure of money for advertising, to change the buying habits of a large number of people. American manufacturers who expend millions of dollars in national advertising are accustomed to dominate their markets by sheer force of persistent appeal. This is certainly an expensive way to sell goods and is generally the result of an ignorance of actual buying habits.

One large newspaper that has carried on an extensive analysis of the market which it covers to be able to tell the buying habits of all the people in this community. It is able, it says, to "put its fingers on the one hundred and one items of knowledge that determine why people buy and why they don't." ("Winning a Great Market on Facts," p. 2.) The Merchandising Service Department of this newspaper boldly asserts that it possesses the facts which show how many people buy at neighborhood stores, how many make their purchases from the downtown stores, and how these people are influenced in making these purchases.

Another investigation that covered a large part of the United States has led to certain conclusions as to the general buying habits in certain commercial sections. It claims that the commercial map of the United States would be far different from the sections for census purposes. There is, for example, a Yankee market in the East which is characterized by close shopping even among the women buyers who have plenty of money to spend. The demand in such a section is for a conservative type

of merchandise which must offer good values at moderate prices. In contrast to this is the great metropolitan market of New York City, where there are the most expensive displays in the United States. Here goods are sold on the basis of style or quality rather than price. There are the manufacturing and mining communities scattered throughout the country which in buying habits are in contrast with the general agricultural communities. In the former there is an element of suspicion and distrust which does not appear in the latter. There is also the Southern section which has its own peculiar commercial characteristics. The old attitude of the cotton planters with its generous tolerance and ready trustfulness has never wholly disappeared. But there are certain spots even in that region which show sharp contrasts. The Piedmont district in western North Carolina, for illustration, has all the cautious buying of the Yankee market and all the suspicion of the manufacturing and mining communities. There is a sharp, well-defined individualistic attitude in this region which sets it off from all the surrounding communities.

There are many intangible elements that go into the forming of buying habits. The students of social problems have given to these indefinable elements a general term of "mores." Every community that feels any solidarity of interest or that looks upon itself as in any sense a unit will begin to form characteristic habits of living; its own individual set of values will begin to form the basis of a tradition which will be handed down from one generation to another. When one approaches a subject of this sort he is, of course, delving into questions that are very largely psychological. Nevertheless, the progressive manufacturer and merchant must include this subject,

also, in the realm of his investigation. Buying habits are a part of commercial research.

The Will to Buy. Back of the wealth of a community and beyond its business habits is the individual will to buy or to refuse to buy goods. Every merchant and every manufacturer must secure the consent of this individual will before a transaction is completed. Sometimes it is remarkably easy; often it is extremely difficult. The most important point is to know whose will controls in the buying. This is, to be sure, largely a psychological problem, also, and can be learned only vaguely and by estimates. There act, however, on every given individual complex influences in regard to purchases. There are generous impulses, and there are the apprehensions and fears as to future welfare to be considered. Since, in the market of this country, the general buying unit is the family, and since in the family the decision rests very largely with the parents, it is clear that their will to buy or not to buy will in most cases control. This fact has been realized in a number of investigations made. One popular magazine analyzed a number of automobile sales with a view to learning whose influence was most important in making the purchase. Five hundred and twenty-four such sales were investigated. The figures lead to the conclusion that in "80.5% of the instances in which the 'woman's say' is indicated, the wife wielded a potent influence." Such a conclusion is obviously vague and indefinite. It may be possible, however, to learn something by this means. In any case, it is extremely important to recognize the fact that there is a will which controls in every purchase made.

In the textile line it is now generally agreed that the woman in the family is the leading spirit in the making of

purchases. "Woman is a shopper," says one writer on this subject, "hence the department store. In the household the man makes the money and the woman spends it." If this position is correct, the appeal must be made to the women of the country. This will differ very materially from the appeals which are made to men. The American woman is, generally speaking, a keen and intelligent shopper and is becoming better informed from year to year. It is also probably true that as her ability increases, her responsibility and control in the making of purchases increase. Whatever the facts are, the important point is to know that here is an element which demands careful consideration.

In the case of the children in the American family, their purchases are very largely controlled by the judgment and will of the parents. It is true, however, that conditions in the United States, even in this respect, differ greatly from conditions abroad. With an increase in general purchasing power there comes a more liberal attitude on the part of parents and a greater freedom of choice for the children. Very often definite allowances are given to the children which they may use in any way they desire. It is well known that certain fads sweep over the country with remarkable speed. The children in very wide districts will take up a certain game and will influence their parents to make the necessary purchase of toys and other equipment. Examples of these movements may be seen in bicycles, coasters, jackstraws, or roller skates. In matters of this kind, of course, the will of the children may frequently prevail in the buying. The facts bearing upon this element of merchandising should be collected and analyzed. It is a part of commercial research to discover all of these intangible elements and to evaluate them.

Potential Markets. In a country where the purchasing power is increasing rapidly, as is true of the United States, there will be potential markets of many kinds to be analyzed. No American business man who is in any sense progressive is satisfied with the amount of business that he is doing. He is constantly seeking new fields in order that he can enlarge his plant or store and increase the volume of business from year to year. A study of business facts gathered from reliable sources and covering a sufficiently large field, will enable him to form the best possible judgment as to the method which he should use in securing this end. Investigations with this point in view have been made by certain popular magazines that desire to convince prospective advertisers of the fact that their pages offer the best advertising medium.

Such an investigation has been made of the possible farm-tractor market. It was assumed that no farm of less than one hundred acres could afford this type of farm machinery. From the census report it was possible to learn the numbers of farms in the country of one hundred acres and up to one hundred and seventy-four acres. There was also another division of farms covering the group above one hundred and seventy-five acres. The first group constituted 24% of the farms in the country; the latter included 18%. It was assumed that one out of every five of the former group offered a potential market for a farm tractor. Of the latter group three out of five should afford a potential market. In addition to this some of the larger farms, it was assumed, would have need of two tractors. The sum total of these three groups constituted, then, the entire market in the United States for a farm tractor. It was then possible to learn from various sources the number of tractors sold during

the preceding year. The difference between this number and the sum total reached above made up the potential market for the manufacturer. It is clear that facts of this character are estimates and not precise facts. There is furnished, however, an ideal or standard toward which to work and also a basis upon which sales plans may be made. Certainly a more complete knowledge of market demand would greatly help in the adjustment of supply and should reduce to a minimum the goods left on the shelves or in the storeroom. One duty of commercial research is to examine this problem of potential markets.

The Effect of Nationality. Another type of problem that arises in commercial research is that of nationality. There is in the United States a great conglomeration of various nationalities, some of them definitely isolated in groups and others intermingled. At the present time there are vast numbers of foreign born who have brought from their native land the personal habits, tastes, and standards of living to which they were accustomed. Since many of them had reached maturity before emigrating to the United States, it is a very difficult and expensive problem to attempt to change these characteristics. The manufacturer or merchant will seek to adapt his goods to their requirements. A German community, for example, will differ in many respects from a Jewish, Irish, or Scotch community. A visit to the public markets in any large city like Chicago or New York will reveal the fact that communities retain the habits which they have formed in the foreign countries. This applies not only to the kind of commodity handled, but also to the form which it takes. Commercial research must examine, through a knowledge of facts, the conditions that are modified by the effect of nationality.

Miscellaneous Factors. Besides the specific elements in the market which have been discussed here, there are many others of more or less influence. One of these, for example, is the geographical conditions which affect the market area. The mountainous region will naturally differ in many respects from the level plain. There will be, for instance, the question of transportation; there will also be the question of climate. A country like the United States that has been settled in a more or less haphazard way will necessarily have developed many small pockets of trade, which need to be sought out by the commercial investigator. There will be remnants of an old régime, traditional business habits and customs, obsolete trade organizations that will need to be taken into consideration. Habits in business persist long after they have ceased to be economical.

The factors in market analysis increase with an increased knowledge of the market. One's judgment must be his best guide in directing any particular investigation. A number of factors have already been discussed, a few others may be mentioned. There is the question of literacy among the people. Some American manufacturers have tried to carry the method of advertising which they used in the United States to South America. But they failed to consider one vital factor which distinguishes that market from the home market. In some South American countries 95% of the people are illiterate. Written advertisements pass them by. There is also the question of dealer coöperation which may affect the demand for commodities. Many manufacturers inquire about the number of people in a given district who own their homes; others want to know whether the cities are manufacturing centers or jobbing centers, and what the dominating indus-

try is. The mining community would differ from the manufacturing community, as it, in turn, would differ from the agricultural region or the lumbering district. As a matter of fact there is no limit to the character of the demand which should be studied by one engaged in commercial research. Every characteristic of human nature may find expression here. Many of the sciences may contribute facts of great value. The only limits to an investigation of this kind are the ability and the finances of the investigator.

It may be said in concluding the discussion of market analysis that these facts fall into two general classes. There are the facts which have to do with individuals. These may be called the personal facts. The other class of facts has to do with everything outside of purely personal matters. The latter treat of the general environment, geographical and otherwise, the climatic conditions and all those forces outside of the individual's personality. On both of these phases of the market there remains much that has to be done in the way of collecting facts.

Conclusion. From this survey of the character of business data it will be seen that facts fall into two general groups. There are the concrete facts, the precise figures representing individual units, and there are the estimated values which are based upon observation and the judgment of a limited number of individuals. The great mass of business data is made up of these estimates. Indeed, even the precise figures are often surcharged with human judgment. Such figures are made to carry the burden of an entire group that has not been individually examined. It has well been said that the proper function of statistics is to enlarge individual experience. This statement holds true of business facts.

In the examination of these facts, whatever their character, it must be kept in mind that the main purpose sought is to establish workable principles. Facts in themselves may be without interest, but when they are made to establish a rule of conduct or a business policy they become of vital significance. A business principle, or a business policy can, however, be only a general rule, or, as economists call it, a "tendency." Lawyers claim that the extreme of the law is injustice. In economic inquiry, likewise, the general rule or tendency may do injustice to the individual. It is, nevertheless, necessary to discover this general tendency and to define the laws which are at work. Only upon a basis of this kind can a manufacturer or a merchant direct his business wisely and safely.

CHAPTER VI

METHODS OF COLLECTING BUSINESS FACTS

General principles — Methods of collecting — Filing cards — By mail — The questionnaire — The person to be questioned — Collector of data — The document itself — Suggestions for using the questionnaire — Investigating on basis of functions.

One should never lose sight of the primary purpose for which business facts are to be used. If they are to be of service to the business manager, they must provide him with the necessary basis for forming a judgment, for developing a business policy, or for solving the problems that arise from emergency situations. In other words, the business facts are accumulated for use. Since this is the case, it follows naturally that the methods employed in collecting business data should be of such kind as to make these facts available for use. A survey will here be made of the various methods which may be employed in accumulating business facts.

General Principles. The first principle for guidance in collecting business facts is that these facts should be made intelligible. Mere records may be no better than machines that are thrown on the junk heap. In this case they will only take up space and cumber the shelves. They may come to hand on neat paper and in good style and yet be worthless. If they are not intelligently collected, the situation is almost as bad as if they are not intelligently used. Much is being said in these days of the necessity for being prepared in advance of the emer-

gency. The first law of preparedness is to have the facts at hand and available. This means that they should be collected beforehand, if possible, in such a way that they may be adapted to serve any purpose. Wherever this is true the method of collecting should be carefully examined, to see that the facts are intelligently collected and made ready for instant use. This will fulfill the old adage, "In time of peace prepare for war."

Not only must the facts of business be intelligible when collected, but they must also be pertinent and of an essential character. It is, of course, not always possible to know what will be needed in the future. The character of the business, however, if thoroughly known, will be a splendid guide in the selection of material. No method, however clever, will take the place of good judgment. There is need of judgment all along the way. It is possible to carry the matter of accumulating data and of making charts and graphs to such an extreme as to become not only useless but ridiculous. Some libraries, for example, have wasted much energy in keeping a check on the number of people who have entered the building. This is not of any essential value unless the purpose of their visit is known. It is a much more pertinent question to ask why people have come than to ask how many have come.

It may be extremely important to have a time clock in order to show when the sales force arrives in the morning, but there is certainly a further need to know how busy they are during the day. In some cases it may be useful to know how many people enter the store within a given period, but it is certainly far more essential to inquire at what times they are concentrated and why. The labor force on the pay roll must be able to take care of the

peak of the load. This means that the sales force must take care of all customers at the point of the greatest sales. It will, however, be a great loss if this sales force must stand idly by at other periods. The facts which bear upon the variability in the number of customers who enter a store are both pertinent and essential. It has been humorously said that the business expert is employed to make charts to show how many girls among the sales force would jump out of the window, how many would go down the fire escape, and how many would flee down the stairs, in case of fire. This is, of course, a grotesque application of the use of business facts.

In order that these facts shall be pertinent and essential, they must be specific and reliable. A mere guess or a mere opinion without a possibility of definite, concrete data is not enough. The constant query should be, "What are the facts?" This inquiry should go far enough to locate the sources of data in order that one may know how reliable they are. Business facts may be either first hand or second hand. To judge them one must know how far removed they are from their original source. The general rule to be followed is that one should reach back as near to the real source as possible in collecting data. Otherwise, one is likely not to be able to realize the ideal of business research, which is to represent the business as it is.

The facts that are being collected should also be comprehensive. However difficult a matter it is to follow the narrow trail between too much and too little, it is necessary to make the attempt in collecting business data. Naturally, it will always be wise to err on the side of too much rather than on the side of too little. As a matter of fact, unexpected uses of the material are to be expected.

“What were our sales last year for March in Ohio?” the sales manager asks suddenly one morning. If the data are available, the material out of which the solution of the problem must come is there at hand. If the material must be collected, then much precious time may be lost. Indeed, the situation may change entirely before the facts can be known. Or again, the business manager may inquire, “How has this product sold?” The records must appear at once in answer to the query. If they do not, the system is not sufficiently comprehensive. “What is the matter up in Jones’ territory?” asks a sales manager. Again the material should be at hand in order to afford an answer to the query.

The statistician for a large manufacturer of grain products had the problem of furnishing all required information to explain the fluctuations in the price of corn. In order to equip himself for this service, he traced the history of corn in the market from 1869 up to date. The price was charted year by year and the causes for all material changes were sought out. The record was then kept up to the minute from market quotations. On the basis of this material it was possible to form a sound judgment on most of the questions that arose. This material was then thrown into the form of an algebraic equation which showed the influence of all the different factors affecting the price of this grain. Whenever there was a change in any given factor, it was at once registered in the mathematical equation. Such a system as this proved very practical when the times were uncertain and when it became necessary to forecast the future. No one can foresee the future more clearly or more successfully than he who has studied carefully the records of the past.

Another large manufacturing concern keeps the essen-

tial data of its business also in the form of an equation:

$$\% \text{ Profits} = \frac{\text{Net Profits}}{\text{Investment}} = \frac{\text{Gross Profits} - \text{Expenses}}{\text{Merchandise} + \text{Receivables}} =$$

$$\frac{\$ 96,000 - \$ 75,000}{\$375,000 + \$100,000} = 15.3 \%$$

Whenever there are changes affecting any part of this formula, they are at once recorded, and the policy of the company is adjusted to care for it. In this way it is possible to cover most of the important phases of any given business. When a market is more than local the task is greatly increased. Nevertheless, the aim should be to make the facts cover the problem. Unless they are comprehensive, some essential things may be omitted.

Another principle to keep in mind in collecting business facts is that these facts should be immediately available. In modern business it is the sure, quick action that counts. In preparing a defense against the enemy, the fuse must be laid long before the enemy approaches. When he is before the gates, it is then too late to prepare the mine or to lay the fuse. The same is true in business. Many problems will not wait for the necessary data to be collected. The business man is doubly defended who is fully prepared. Most accountants know full well what quick demands for business facts are. The most unexpected things are asked of him and he must produce the facts. This can only be done, of course, where the facts are quite fully analyzed as they are recorded. It will be a great help, therefore, in making the material available if there is full coöperation among many departments. No single department can possibly accumulate or fully analyze the material for the entire business. The next best thing to

knowing the facts themselves is to know exactly where they may be found. Somebody in every business establishment, if he does not know the facts themselves, must know who will know these facts.

In these days of extreme complexity of business there is need of much anticipation as to the effects of various changes. The manager who can see farthest and most clearly is the manager with a distinct advantage. Anticipation of needs means a thorough knowledge of business. This knowledge should be not only general, but also specific and flexible. Knowledge is not known for its own sake, but in order that it may become useful, may become business wisdom. One large firm desired to know more about its own affairs in order that it might do business more intelligently. For this purpose alone it had need of a man expert in business research. But further than this, it desired a man who would have the facts of this business at his fingers' tips, so that he would be able to answer instantly all public misstatements regarding this business. The company had often felt that its good will was injured because these misstatements, which appeared in public print, remained unanswered. This is, of course, only one of many reasons for having the business facts immediately available for every call.

Methods of Collecting. A discussion of the methods of collecting business facts assumes that all the sources have been fully canvassed. If the material is now at hand or is being accumulated, from these various sources, how is it to be recorded? In the first place, the methods must fulfill the requirements stated above. These facts must be made intelligible, they must be pertinent and essential, they must be comprehensive in character, and they must be instantly available. A large part of the responsibility

for securing these desired results rests with him who determines the methods of collecting the data.

In collecting business facts there are two main problems. These fall into two groups on the basis of the general source of the facts. There are what might be called the internal data of the business. These are the facts that are secured from one's own records. If these records of original entry are kept in the intelligent manner which should characterize them, the problem will not be a difficult one. It is not likely, however, that these records will afford material that is sufficiently comprehensive. However essential and pertinent the facts from these sources may be, they are by nature narrow in scope. It is always possible to control the sources of this kind of material and to make any modifications that seem necessary in the case.

The other division of business facts may be called the external data. These are secured from people outside of the immediate business organization. Clearly, the problem here is a far different one from that of securing facts from one's own records. In this case one cannot control the source of material and one must rely upon another's will to secure it at all. The character of the facts and the scope of the data will here depend upon the method of collecting and willingness of others to give out the facts. The chief problem connected with methods of collecting business facts, therefore, will rise from this second group.

Filing Cards. There has been a very extensive development recently in the use of filing systems. There are today many of these systems differing in minor respects, but all very effective in furnishing a convenient method of preserving data. It is not the intention here to describe any system in detail, but merely to suggest the possibility of using a method of this kind to record the facts which

may be of service in research work. There are several books that have been published on the subject of filing and of card indexes which will explain the advantages and disadvantages of the various systems. By some such method as filing cards, it is possible to condense very greatly the business data which are to be analyzed. Sometimes these small cards will carry an astonishing amount of material. With sufficient skill it might be possible to write a life history of a business on one's thumb nail. The use of filing cards seems to be a striking instance of this condensation.

Many businesses have made extensive use of filing systems. In certain large mail-order houses, for example, "the names of from four to six million customers are contained in a card index. That is, so to speak, the very heart of the business, and this card index is being continually corrected and kept up to date. It shows what the customer has bought from the beginning, whether he is the head of the family — and sometimes the other members of the family — how long he has lived at the address given, and any other information obtainable that is of value in dealing with him. To this list which is carefully guarded the wonderful catalogues which describe the goods offered are sent out by mail." (T. H. Price, "The Outlook," January 26, 1916, p. 230.) Many life-insurance companies keep a very careful card index of the holders of their policies and of prospective customers. Anything regarding them that may be of use to the insurance company is recorded on these cards. The files thereby become great storehouses of information, held in reserve for instant available use. Even some rural retail stores have installed a system of filing cards which carry much valuable information about the people in the countryside where they are located. An English poet was compelled to go to the

church records of births, deaths, and marriages in order to find the life histories of the people in the community. This material, that always ended in a tragedy, was woven together into a classic poem. In the United States it would be possible to secure material of this sort from the card-index systems of many progressive merchants.

The possibilities for a method of this sort are practically unlimited. Suppose a merchant in a small town would begin to record the history of the retail establishments in his community. It would be astounding the amount of wisdom which might be gleaned from many unhappy experiences. One dealer, for example, keeps on record all the happenings in his community which directly affect his business. He can turn immediately to the card that will show the kind of weather, in his community at any given date. Such facts may be quite immaterial in general, and yet on certain occasions they have proved to be of great practical importance to this man. How far records should be carried is once more a matter of individual judgment. Experience will be the best guide in this matter.

A few principles may be stated to direct one in the use of the card index. These rules must of necessity be very general in character. They should, however, summarize the experience of those who have made use of this method.

(a) The essential point in the keeping of records by filing cards is to get all the desirable data in a compact, intelligible form. The system can be controlled completely. It is flexible; it is adjustable; it may be made self-clearing; it can be kept up to the minute. In detail the system can go as far as time and returns permit. For the most part in the keeping of records by a card-filing system, it is altogether one's own affair.

(b) The arrangement of the cards in any system can be made to suit any purpose. When the purpose has been clearly defined it is then a matter of no great difficulty to make the filing system suit this aim. The system should be kept as simple as possible and the analysis should go into details as far as may be proved desirable. The size of the cards will be adjusted to the amount and kind of material they are to carry. In the system the cards may be arranged on any analytical basis that appears to be most serviceable. The general principle in the arrangement is that when compiled the material should be largely analyzed.

(c) There are several methods of filing material by cards. The one to be used will depend upon the immediate purpose in view. One of these methods is by letters of the alphabet. A second one is on a geographical basis. Sales, for example, may be filed on the basis of states, counties, cities, or otherwise. Another method is on a numerical basis where figures mark off the various points. Then, again, the system may be based upon chronology where the time element is the essential thing. Another method of filing is by subjects. Here, of course, the material is analyzed as it is filed. One may also use names as the basis of a filing system. It is always possible to combine these methods and gain the advantages of more than one in any filing system. As has been said, the purpose in view will probably determine the method to be used in every case. Experience also will be the best guide in determining how far the filing analysis shall go and what kind of cross references should be made.

Once the method of filing has been selected, the arrangement of cards may be either by color or by position. Cards are usually arranged to carry the main topics by

the above methods. The advantages of color and position will be fully explained by those who have the system to sell. (NOTE: The following characteristics of the perfect index have been assembled by one of the larger manufacturers of filing cases. The items listed will be valuable as suggestions in organizing a system.)

The Perfect Index.

"Perfect Alphabetical Index."

1. It must be simple to operate.
2. It must not be complicated by numerical or other additional factors, such as the use of given name or surname.
3. It should have one letter only on each tab so far as possible.
4. It must be accurate in filing and finding.
5. It must be swift as well as accurate.
6. It must be applicable to the exact conditions of any particular file.
7. It must be able to expand with the file as it grows, or change as the requirements of the file change.
8. It must divide the papers into evenly proportioned groups throughout the file.
9. It must not have a single useless guide.

First Principles of Filing, p. 31.

THE MACEY COMPANY

By Mail. A method that is very much used by business men to-day in collecting data from outside the business is by sending inquiries by mail to a selected list of people who have the experience and knowledge of facts desired. This method of securing material has very difficult prob-

lems connected with it. The task of writing a good letter of inquiry is in itself a complex and difficult one. It is so easy, however, to send off a letter hoping for good results, that this method is likely to be overdone. No investigation of great importance can be carried on by this method alone. There is every evidence that business men are growing restive under the deluge of letters of inquiry which they receive from day to day. To these time-consuming inquiries must be added the increased number of reports required by government authorities. In some cases the business men are beginning to wonder how much time they will have left for their own affairs.

One cannot blame the busy manager if, when he receives a letter containing a number of questions, he is likely to inquire: "What do I get out of it?" As a matter of fact, in most cases he gets nothing at all except possibly the good will felt by those whom he has served. Knowing this full well, he is very much inclined to throw the letter and all its contents into the waste-paper basket. However useful this system may be in supplementing facts, it is becoming more and more clear that important business investigations must be carried on by other means. Much valuable information, however, is available through this medium, and it is in itself sufficiently useful to justify detailed discussion.

It is a general custom to secure information either by a combination of a letter and an inquiry or by a letter which introduces the questions to be asked. Unless the investigation is of a very simple character, it is wise to make the questions themselves an inclosure in the letter. In both cases, however, there is need of great skill in writing a letter and in framing the inquiries. The chief purpose of the letter itself is to persuade some one to do something

for you. The letter must persuade to a course of action which is for your own personal interest. It is both a difficult and a delicate matter to achieve success in a letter of this sort. Some of the qualities necessary for success will be discussed here. The construction of the inquiries themselves will be treated separately.

(1) The letter of inquiry must first of all interest the reader. If it does not at once make its way into his interest, then it is lost in the waste-paper basket. There are countless methods that may be used to secure interest at once, but one out of these many may be suggested in detail. A very successful means of awakening interest is to state the problem which forms the basis of the inquiry in an interesting way. It is not sufficiently realized by most business men that their problems are in large part common to them all. If this were realized and if the very beginning of the letter defined one of the reader's own problems clearly, there would be an excellent chance of arousing his interest in the matter under inquiry. This statement of the problem might bring to him a new point of view. It might present the case more strongly than he had heard it presented before. It might phrase for him what had been heretofore in his mind a vague idea. If he can see how this problem arises in his own business, one may well expect him to do some thinking on the paper which contains the inquiry. Such returns from an investigation will prove of great value. In most cases, it is wise, therefore, to begin such a letter with the statement of the problem in as concrete and vivid a manner as possible.

(2) A letter of this sort must also be brief, succinct, and to the point. It is not a newspaper that is presented before the reader, and there is no leisure to scan it as may

be true of the morning or evening news. A pertinent question to ask in regard to such a letter is: What does the first glance show? This is in reality the critical moment. In meeting this question it is good advice which says to study yourself. You are probably, after all, a typical business man. How do letters affect you? What interests you? What do you consign to the oblivion of the waste-paper basket? In the writing of letters, as in all other matters of conduct, to your own self be true.

(3) Much has been written in recent times about business letters filled with what is called in business parlance, "punch." There is no doubt, however, but that this quality may be overdone. Courtesy, even in business relations, is not a lost art. There can be no question but that a letter gathers force as it becomes more simple and more direct. It must be remembered, however, that a good letter is characterized by natural simplicity and not by artificiality, by directness and not by smartness. It is so easy for the so-called punch in business letters to degenerate into mere smartness and even impudence.

(4) No better advice in writing a letter of inquiry can be given than to try to visualize the reader. One should attempt to imagine the receipt of his letter by some one sitting at a desk who opens that letter and receives his most vivid impression by his first glance. This is the impression that really counts. The most important thing to keep in mind in writing a letter of this kind is that the real point is not what the writer says, but what the reader gets. Successful commercial writing is that which has the greatest power of impression and not that which has the greatest facility of expression. This letter has made its way past all the guards into the office of the business

man. It is often the case that a letter can go in where visitors cannot. But the writer should be careful not to abuse this privilege.

(5) It is also of prime necessity that the writer of a letter of inquiry should have himself a clear understanding of the business problem. The most effective letter springs directly out of a given situation. It must meet all the conditions of that situation. It is the representative of the sender, and it should carry with it the personality and skill and judgment of the writer. This can be true only when the writer has thoroughly mastered the subject upon which he writes.

(6) Another quality of the letter of inquiry is that of sincerity. Every letter should have this characteristic. But it is especially true of the letter which asks another to do a favor that it should be obviously and absolutely sincere. Any pretense is dangerous. Sham and cant are very likely to be discovered. If they are, their effects will be unfortunate.

(7) The letter of inquiry must also explain the point at issue and give directions clearly and exactly as to what is to be done. The writer should remember that the primary aim is to get action. This is to be prompt, immediate, but careful action. The point, therefore, which the letter carries must always be explicit. When this is made clear and interesting it then remains to show what is to be done by the reader. The story is told to illustrate the different effects produced by famous speakers, that those who went to hear the great Greek orator, Demosthenes, came away saying to one another: "Let us go and fight the enemy, King Philip," while those who went to hear the great Roman orator, Cicero, urge similar action against

Catiline, came away saying to one another: "What a great orator he is." This illustrates the difference between a letter which calls attention to itself but leads to no action and the letter which secures the action desired. It is, of course, necessary that the action shall be as little burdensome as possible.

(8) Careful attention should also be given to the general form of the letter. There is a question of the kind of stationery to be used. To-day most large firms are giving considerable time to the study of the business letter from this point of view. When it is remembered that these outward characteristics are a part of the first impression, their importance is clear. Not only should there be good judgment in the wording of the letter itself, but there should also be good taste in the form of the letter. "Business correspondence has become an art."

(9) The writer of a business letter should always have some method of testing its excellence. There is one test always at hand; that is the results which are produced. "The real test, and the only test of a business letter, is this: Does it make your correspondent do what you want him to do? Does he respond?" (Gardner, "Efficient Business Letters," p. 232.) In one respect, at least, a letter of inquiry is like a machine. If it does not do its work, the machine goes to the junk heap. If the letter does not arouse interest and secure attention, it goes to the waste-paper basket. The real test, therefore, is what is the impression which the letter makes upon the reader?

(10) Another phase which needs consideration is what may be called the mechanics of the letter. This term includes the heading of the letter, the superscription, and the ending. It is rare that a letter of inquiry should cover

more than a single page. More than this seems too formidable for the busy man to read. No further advice than that good taste should be used in the selection of letter headings needs to be given. Many of the paper companies have published very suggestive pamphlets illustrating many kinds of headings which may be used. The real test of the mechanics of a letter is that the attention should be centered upon the real point of inquiry which the letter contains and at the same time gives all the necessary information as to whence the letter has come and where the answer is to be sent. Sometimes letters of inquiry of this character are sent out under an assumed name by advertising agencies and business-investigation companies. On the whole, this is not a wise policy. There is in it a lack of frankness and sincerity which will almost inevitably decrease the effectiveness of the letter.

An example of the letter of inquiry which contains many excellent points is given below. It will be seen that this letter attempts to meet most of the requirements which have been discussed. It is not in every respect a model, but will readily serve to illustrate the character of this kind of a business letter.

Dear Mr. —:

The query in my mind is — does Mrs. Average Woman have more confidence in articles recommended by her dealer or in articles which she sees advertised?

This is no doubt a question to which you have given much thought. Your judgment and experience would be of great value in helping to answer it.

Take woman's dress goods, dress silks, and wash fabrics, for examples. Has the dealer's influence in the sale been reduced by the national advertising of brand names on these goods?

A simple check in the squares on the inclosed card will carry to me your matured judgment. You may be sure that I shall appreciate it very much.

Very sincerely yours,

P. S.— Any comments or observations which you may feel inspired to give would be welcomed.

The Questionnaire. The most important and the most difficult medium for collecting business facts is the questionnaire. There are many problems connected with the construction of a questionnaire which need careful attention. The purpose in this discussion is to call these points into review and make a general survey of the subject. An attempt will be made to be suggestive of principles for guidance in the framing of questions whose purpose is to secure reliable business data. The success of an investigation depends very largely upon the success in making a usable questionnaire.

The problem of framing a questionnaire has three main aspects. Each of these is very important in itself and can be settled finally only in its relation to the other two. The first point of view is that of the person who is to answer the questions. This is the beginning of the analysis for the construction of the series of questions. Another aspect is that of the one who is to collect the data. This point becomes of particular importance when the investigation is to be carried on by a personal visit. Where the questionnaire is a mere inclosure in a letter of inquiry, there is no special point in thinking of the collector, because the writer and the collector are one and the same person. The third aspect is that of the questionnaire itself. It should be considered as a document

even apart from the person who is to be questioned and from the collector. Each of these phases will be discussed somewhat in detail.

1. *The Person to Be Questioned.* One of the first considerations in thinking of the person to be questioned is this: Can he answer these queries? It is obvious that time will be wasted in useless endeavor if inquiries are of such a character that the person questioned cannot give an intelligent answer. It is assumed in making an investigation that the person of whom the inquiry is made has some special and important information to give. Unless this is the case, there can be no good reason for making the investigation. The analysis of this point should, however, go further than the mere determination of whether the person questioned has any knowledge which lies within the field of inquiry. Many businesses have technical phases that require highly specialized knowledge. It is not every one in the business organization who has this technical knowledge. The man in the office may be quite ignorant of the technical matters in the shop. The general manager may not know the details of accounting. The sales manager may not be an authority on the subject of buying. It is, of course, the beginning of wisdom to ask a question which lies within the special duties of the one who is to answer.

The second test of the questionnaire from this point of view is: Will the person questioned understand the questions asked? This means that the framing of the particular questions must be such that the one who is to answer will quickly and readily grasp their exact significance. It is not every one who can ask an intelligent question. Sometimes a question will reveal an embarrassing amount of ignorance on the part of the questioner. No one is

equipped to frame a series of questions for the purpose of business investigation who does not understand the particular terminology of the business into which he is inquiring and who cannot ask questions that are intelligible to any one familiar with that business. Much writing in philosophy is unintelligent to the ordinary reader because the language in which it is clothed is not the language which he uses. An inquiry into any business that is couched in academic terms of political economy may not convey to the business man any definite idea. It is obvious that the best returns will be secured from the most intelligent questions.

A further consideration of the questionnaire from this point of view is — will the person questioned be willing to answer? It is a waste of time, of course, to ask questions of such character as to antagonize the one who is questioned. It is equally useless to frame inquiries to which the business man will not be willing to make reply. His unwillingness to answer may be due either to the way in which the question is framed, or to the nature of the question itself. It is nearly always possible to secure information indirectly where the direct method has proved to be a failure. That was shrewd advice which urged upon the inquirer in personal affairs “by indirection to find direction out.” This does not mean that any unfair or underhanded methods should be used. The point is that great skill and tact are needed to frame the questions in such a way as to secure the greatest amount of information with least friction. The business man has not much leisure, generally, and desires that the questions asked him be brief and to the point but at the same time he appreciates courtesy and tact.

There is a further consideration of the questionnaire

from the point of view of the person questioned. This has to do with the character of the questions. The general rule is that the questions should be of such a character as to elicit simple and definite answers. Generally the replies which are secured from the questionnaires have to be presented in some intelligent order. These replies must be of such a kind that they can be readily classified. If, for example, it is desired to tabulate the answers that have been received, they must be of a tabulatable character; that is, the replies should be either "Yes" or "No" or in figures. When they are merely descriptive and vague they are not of such character as to be tabulatable. This means, in other words, that such replies do not furnish a basis for generalization. For example, the following question was included in a long and complicated questionnaire, the reply to which is also given: "13. What is your plan for finding out where to buy goods to the best advantage? Answer. Sugar and butter are advertised as three cents cheaper and when you get it the quality is bad."

Such a question and such an answer will not give a fair basis for any judgment of policy or practice. The vagueness of the question and the vagueness of the answer make the whole investigation on this point useless.

Another point to be considered is the ease of entering the reply on the questionnaire. This is of particular importance when the questionnaire is sent by mail. There is no chance to secure a large number of replies when the questions require considerable time or effort to answer. The best method, whether the questionnaire is sent by mail or is carried by a personal investigator, is to have the questions framed in such a way as to enable the answer to be made by a single word, "Yes" or "No," or by a check.

It is not always possible, however, to frame questions in this way. When the questionnaires are carried by personal investigators, it is wise to frame them in such a way that the investigator may quickly enter whatever replies he may receive. Much valuable information may be secured as a by-product of the questionnaire if some room is left for additional remarks. If, by chance, the person questioned has a real, live interest in the inquiry, he may be willing to add some comments not directly called for by the questions. These additional comments often contain very illuminating sidelights.

2. *Collector of Data.* The collector of business facts both by mail and by personal interview must be qualified for his task. The characteristics of the letter of inquiry have already been discussed. It now remains to be pointed out that no successful investigation is likely to be made unless the investigator is fully equipped for this duty. One of the obvious requirements is that he shall have a sufficient background of knowledge in the particular field where his inquiry lies. Experience also is a great asset in carrying on investigation. One learns by experience how to approach business men, how to ask questions so as to secure the best information. In this kind of work there is need, of course, of a high degree of tact. The task is a difficult and delicate one. Blunders are very costly. They may mean failure in this case, and an antagonistic attitude for the future. Some men have natural qualifications for making business inquiries; others require much training before they can be successful.

From the point of view of the collector, the questionnaire should be examined to see if the form and organization of the queries are the best possible with reference to the ease of asking questions. This means that considera-

tion should be given to the order in which the questions appear. Clearly, the first question should furnish a natural and graceful method of approach or of introduction. The most general and the questions most readily answered are those which would naturally come first. There are always in the questionnaire some "ticklish" questions. It is useless to ask these until the way has been opened for them. If possible, these should come last in the series.

Another test of the questionnaire from the point of view of the collector is whether the questions are of such character as to make possible a rapid and accurate recording of the answers. It is almost always unwise for queries to be framed in such fashion as to require long answers to be written in. Even where the investigation is carried on by personal interviews, it is much safer to have the questionnaire so constructed that the interviewer can use checks or single brief words to indicate the replies. The business man, in general, immediately becomes nervous when he sees his words being written down on paper. His instant reaction is that he is committing himself. Many times he will be self-conscious and afraid he has said too much. The business man is generally timid in the matter of being questioned. This is due to the fact that he has the good will of his customers and of others who deal with him to maintain. However radical his private opinions may be, he feels that he must suppress them for "the good of the system." It is, of course, not wise for the investigator to arouse such fears as these.

No investigator is ready to do his best work unless he is so familiar with the questions to be asked that he does not need to rely upon the questionnaire itself. This document, however, offers the best method of training the investigator in the proper means of approach and in enabling

him to direct the conversation with the business man into the proper channels. There is, to be sure, the further need for a careful record of the facts secured before they have grown dim in the memory. In practically every instance, it will be found that a little experience with the given questionnaire will reveal the essential and the minor questions that appear there. While it may be too late to change the entire document, it will not be too late to emphasize the essential questions. In this case, as in all others, an alert judgment is necessary for best results. If the questionnaire is not actually used in interview, the investigator should not delay for long after the close of the interview before he notes down the answers to the queries. The human memory is an unreliable thing.

In every interview there is much more than actually appears on the surface. He is not an investigator of the first grade who does not carry away from every conversation far more than the words themselves express. There is around this conversation an aura of observation and interpretation which may be of great importance in the final results. The best investigator is the keen observer who is quick to see and interpret every detail. It is probably wise, therefore, for the questionnaire to have a space left for comments or remarks to carry these extra facts.

3. *The Document Itself.* Apart from the person to be questioned and from the interviewer, the questionnaire may be considered as a document in and of itself. Certain questions should be asked which will test the efficiency of this document. One of these questions is: Is there a logical grouping of the queries in the questionnaire? It may be that there is a repetition of questions. It often happens that one query will bring the answer to one or more others. Where this is true, it is a waste of time to

include them all. There is also the question of unity in the questionnaire. Do all the queries bear upon the essential points of the investigation? Sometimes questionnaires carry inquiries that have only an indirect bearing upon the issues of the case. In general, it would be wise to eliminate such questions as these. There is also the question of compactness of the questionnaire. It should be framed with a view to the greatest economy of space. By careful analysis it is possible to crowd into a very brief space a great deal of information. By classifying and subordinating topics such results are obtained. It is also necessary to examine the document to see that the questions are so arranged as to enable the collector to jot down the facts required whether the actual questions asked are on the questionnaire or not. The importance of this will be readily justified by experience. It is frequently true that a question concerning the prosperity of a business may furnish the data for volume as well as net returns. There should be on the questionnaire a place for tabulating all of these facts desired.

4. *Suggestions for Using the Questionnaire.* It may be necessary to repeat that much tact and skill is required for the best results from investigations. Every man must here be largely his own guide and must have the power to adapt himself to all the circumstances of the case. A few general rules, however, may prove of value. It is not wise for an investigator to write down much in the presence of the one interviewed. Attention has already been called to the fact that business men quickly grow self-conscious in a situation of this kind. There is also need of great care in opening up the subject. It may not be possible at once to plunge into the midst of the questions. Some business men like brevity and quickness of action. Others are at

first timid and cautious and are awkward in expression until they feel full confidence in the investigator. In almost all cases frankness and directness are the best means of approach. Some people have a natural ability in guiding conversation. Others must acquire this capacity. It is an interesting game, but also a difficult one, to direct a conversation into the proper channels to secure the desired information. Skill in putting questions is likewise a great asset for the investigator.

There is probably no better statement of the whole subject of framing a successful questionnaire than that written by an English statistician. The passage is frequently quoted and should be familiar in every detail to any one interested in using this method of collecting data. Great depth of wisdom is contained in it. The passage reads as follows:

"The questions must be so clear that a misunderstanding is impossible, and so framed that the answers will be perfectly definite, a simple number, or 'yes' or 'no.' They must be such as cannot give offense, or appear inquisitorial, or lead to partisan answers, or suppressions of part of the facts. The mean must be found between asking more than will be readily answered and less than is wanted for the purpose in hand. The form must contain necessary instructions, making mistakes difficult, but must not be too complex. The exact degree of accuracy required, whether the answers are to be correct to shillings or pence, to months or days, must be decided. Every word, every square inch of space must be keenly criticized. A little trouble spent upon the form will save much inconvenience afterward."

Investigating on Basis of Functions. The great majority of business investigations are aimed at a specific problem. The data are collected for a very definite purpose. The result is that most questionnaires are built up

for a particular occasion and from a narrow point of view. It may be possible to establish some general principles in the making of questionnaires which may be adapted to any kind of study. One writer has said in regard to this phase of the subject:

"It may be mentioned that one other feature of this classification of marketing functions is its value to the scientific student of marketing subjects in performing his research work or trade investigations. With these functions in mind, he can approach practically any kind of dealer or trader and ask a fairly intelligent and comprehensive set of questions without knowing much of anything about the trade. For example, suppose one wishes to study flour brokers. Begin with the assembling function, and ask: For what class of mills do you sell flour? Where are they located? For how many mills do you sell? Under what arrangement do you handle flour for your principals? etc. Then take up the storage function, and ask: Do you keep flour on hand for your principals? If so, is it kept in a public warehouse? Who pays storage fees? Why and how long is it kept on hand? etc. By going through the list in this way, and by having a certain amount of merchandising knowledge which makes one answer suggest another question, an investigator can find out practically everything he needs to know of the functions of any class of traders." (*American Economic Rev.*, June, 1917, page 318.)

If the suggestion made here of isolating the various functions connected with marketing products is followed, it may prove to be possible to frame a general questionnaire which is readily adaptable to any kind of commercial research. As an example of an attempt to carry out this suggestion, the following questionnaire is given:

BROKERS

- | | |
|-------------------------|-----------|
| 1. Name. | Location. |
| 2. Commodities handled, | |

3. Whom do you represent? (manufacturers, importers, etc.)
4. Where are they located?
5. How many concerns do you sell for?
6. Why is it cheaper for them to employ you, rather than send you their own salesmen?
7. Do your principals keep stocks of goods on hand in Chicago?
8. In public warehouses?
9. Do you have to get prices confirmed?
10. Do you advance money to principals?
11. Does your principal bill direct to purchasers?
12. Do you have exclusive sale of your principal's products in this territory?
13. Just what is your territory?
14. What is the usual brokerage fee?
15. Any smaller fee for large sales or contracts?
16. Do you buy goods on your own account?
17. If so, do you buy to speculate, or merely to have stock on hand for your customers?
18. Is there a tendency for manufacturers or importers to employ their own paid representatives instead of selling through brokers?
19. To what class of dealers do you sell?
20. Do your customers try to buy direct, rather than through brokers?

A questionnaire may be brief in form yet comprehensive in character. In this case it is desired to obtain the greatest possible information with least effort. The results of such an inquiry are likely to be less reliable than when it is more detailed. It is, of course, clear that such a questionnaire must be used by an investigator and will not serve as a means of collecting by mail. In such instances there is much that is left to the investigator. The example below will illustrate the point discussed here.

DEPARTMENT STORES

1. Are women's dress goods sold by brand?
2. If so, does customer demand a certain brand, or is the brand sold?
3. Is stock selected on the basis of brands? Yes. No.
If otherwise, on what principle?
4. Is the stock plan modified by requests of customers?
5. Is the purchaser insistent on getting the brand asked for?
6. Is there anything in the character of the goods that will explain the condition?
7. Is the condition the same for the following articles?
 - a. Women's ready-to-wear garments?
 - b. Silk goods?
 - c. Hosiery?If there is a difference, how can it be explained?
8. What are the most popular brands of these goods? Why?
9. Would you say the following brands are sold to customer by sales person or are asked for by customer? Why?
 - a. Betty Wales Dresses.
 - b. Burson Hosiery.
 - c. Printzess Dresses.
 - d. Mallinson's Silks.
10. Which do you find to be the stronger selling point:
 - a. Goodwill attached to the name?
 - b. Price?

The survey may be far more elaborate than has yet been illustrated. Some questionnaires cover many pages and require a long time to fill out. Many of the government inquiries are of this character. These, of course, carry the authority of the government with them, and therefore make it less necessary to consider the convenience of the person to be interviewed. An example of a more extended questionnaire is given below.

SHIPYARDS QUESTIONNAIRE

(Great Lakes District)

- I. *Name of plant.*
- II. *Location of plant.*
- III. *Number of laborers in plant:*
 1. Number of laborers (foreign born): Percentage
 2. Number of laborers (experienced hands): Percentage.
- IV. *Data on riveters:*
 1. Number of riveters: Experienced: Inexperienced:
 2. Number of hours worked per month by riveters.
 3. Number of rivets driven per month.
 4. Average daily number of rivets driven.
 5. Standard daily riveting output for experienced workers.
 6. What is responsible for difference?
- V. *Methods of payment:* Time? Piece work? Bonus?
Any further comment?
- VI. *Amount of pay (actual earnings) by classes — yearly basis:*

Blacksmiths —			Machinists —		
Amount	Rate		Amount	Rate	
Boilermakers	"	"	Molders (iron)	"	"
Iron Calkers	"	"	Painters	"	"
Wood "	"	"	Pattern makers	"	"
Carpenters	"	"	Riggers	"	"
Drillers	"	"	Riveters	"	"
Fitters	"	"	Sawyers, circular	"	"
Joiners	"	"	Spar makers	"	"
Laborers	"	"			

- VII. *Regularity of attendance:*
 - Is work intermittent?
 - Generally?
 - For classes?
 - Account for conditions.
- VIII. *Character of foremanship:*
 1. Selection and training for foremen.
 2. Experience of foremen.
 3. Methods of discipline.

IX. *Housing conditions:*

Adequacy.

Needs.

Account for conditions.

X. *Transportation service:*

Adequacy.

Needs.

Account for conditions.

XI. *Unionization of plant:*

What is degree of unionization?

On class basis?

Effects?

XII. *Strike record:*

Number of strikes.

Date of strikes.

Number of men out.

Length of time out.

Causes of strikes.

Results of strikes.

XIII. *Instruction given new workers:*

Kind.

Amount.

How organized.

REMARKS.

Date, _____.

Signed, _____.

Investigator.

CHAPTER VII

THE ANALYSIS OF BUSINESS FACTS

Business statistics — Steps in statistical analysis — Determining the unit — Elements of error — Eliminating errors — Statistical averages — Arithmetic mean — The weighted average — Index numbers — The median — The Sampling method — Conclusion.

The most difficult as well as the most important problem that faces one engaged in commercial research is the task of analyzing business facts. The material has been collected from many different sources and has been influenced by many different forces and contains inaccuracies that may make any conclusions untrustworthy unless all these things are isolated, and their effect is carefully considered. This process of isolation and the weight to be given to every influence that has affected business facts is the process of analysis. How can one know the truth from a mass of inaccurate data? How can one eliminate the undefined errors that find their way into material of this character? What are the principles that should guide one in his analysis of business facts? These are the questions which must be answered before progress can be made in reaching sound conclusions from the data collected.

Business Statistics. It has been shown that business facts are of two general classes; there are the precise facts where every number represents a definite unit and there are the estimated values where judgment of unknown facts has been included. Both of these types may appear in the form of figures. On the surface they both appear

equally definite and equally specific. This, of course, is not the real case. Because there is this essential difference between these two classes of material there is need of a different method of analysis for each. The handling of precise facts is a relatively simple matter. Even here, however, the interpretation of the facts may become very difficult. It is in the realm of estimated values that the greatest problem arises, and it has been shown that estimated values make up a very large proportion of the material which the manufacturer or merchant must use. In the analysis of this kind of material, the principles and rules that have been developed by the science of statistics will come into use. These principles and rules are, in general, simple and not difficult to employ. They have not yet been stated, however, in simple or clear language, or explained in such a way as to make them available for the general business man. Attention will here be given to the body of principles that seem most readily applicable to the business man's problem.

Definition of Statistics. The science of statistics has been defined as the method of judging natural or social phenomena from the results obtained by the analysis of an enumeration, or a collection, of estimates. (W. I. King, "Elements of Statistical Method," p. 6.) This definition may be interpreted in more popular terms by saying that statistics is a method of estimating values where all the data cannot be represented unit by unit with some definite figure. There remains over and beyond every item observed or counted an unknown or unseen remainder which must be judged by that portion which has been examined. As one writer on the subject of statistics has expressed it, "the proper function of statistics, indeed, is to enlarge individual experience." (Bowley, "Statis-

tics," p. 8-9.) The same idea has been expressed in other terms and with the definite aim of making these terms apply to the business man's problem. "Statistics may be defined as numerical statements of facts by means of which large aggregates are analyzed; the relation of individual units to groups are observed." (Copeland, "Business Statistics," p. 3.)

From these definitions it is to be seen that the science of statistics aims not at absolute but at relative values. It attempts to answer the question, What is the relation of this unit to the total number of units in the same class? It searches, also, for the relationships which exist between various units. The whole subject may be divided into two general groups. One of these may be called "descriptive statistics," which deals with the records of what has been done or with what is true to-day. This kind of statistics is illustrated by the United States Census report. The general business attitude toward the records kept in the business establishment is also of this same character. The other kind of statistics may be called "applied statistics." Here the attempt is to use the material that has been accumulated for the purpose of establishing certain principles, by means of which one's conduct may be guided. In order to determine these principles, the relationship of cause and effect must be found. No manufacturer or merchant can meet his administrative problems fully without the use of applied statistics. As a matter of fact this is the new phase of business which commercial research is ambitious to develop. A far more intelligent control of business may be had by a more thorough grasp of these statistical principles which may be used for administrative purposes. It may be said that administration is the final aim of all statistical study and of commercial

research. It follows, therefore, that this type of statistics is of great importance to the business man.

Steps in Statistical Analysis. There should be a logical process in the analysis of business facts. As is true of every other problem, so this one must have a best place to begin, a best method in order to obtain the best results. It is probably true that every business problem will appear so unique as to demand special methods of analysis. Heretofore, it has seemed to most business men that their own individual problems were so different from those of other business men that no general principles could be employed. This belief, however, is passing away. Many people are seeing that there are fundamental principles of business which are not confined to any establishment or to any line of goods or to any community. The same should be true of the method of analysis.

The obvious place to begin with an analysis of any kind is a defining of the problem. The investigator should always ask himself what definitely is the problem which lies before him. Unless the problem is thus clearly defined, much time and money may be wasted and much material that is of no immediate value may be collected. This does not mean that an indirect approach to a problem may not be under certain circumstances the wisest method to use. It cannot be emphasized too much, however, that the real issues in the case must be clearly in mind in order that the investigation may be intelligently conducted.

A very excellent beginning for defining the problem is to attempt to put it into words. There is no better method of clearing up a hazy idea than to phrase it intelligently. There was, for example, a recent investigation that had for its general aim to discover the advertising influences of the columns of certain trade papers. The

investigators worked for some time in a general way on this question before they discovered that the real issue in the case was whose influence controlled at the moment of sale, the dealer or the customer. It was only at this point that the problem was phrased with sufficient clearness and definiteness to make the investigation clear. In the selling of commodities of a certain type, does the dealer's recommendation influence the customer more than the general advertising appeal carried by popular magazines and newspapers? A determination of this question would likewise solve the whole general problem of the advertising influence of trade papers. It could then be known whether the best appeal was to the dealers or to the consumers. Probably no better general rule could be laid down than this; namely, that the first step in defining a problem is to express that problem in clear and definite language.

The second step in the definition should be the taking apart of the problem so as to see the various relationships between these parts. This process might well be called the isolating of the factors. Take, for example, the problem cited above. That is, the determination of dealer influence in the selling of goods. Obviously some parts of that general problem would be: first, the kind of goods in question; second, the influence of trade names or trade brands; third, the character of consumer advertising; fourth, the influence of the manufacturer in putting goods on the dealer's shelves; fifth, the position of the dealer in the community and his relation to customers. These and many other phases of the general subject should be carefully sorted out and examined individually. Some of them, of course, would be of far greater importance than others, but a critical examination will enable one to rec-

ognize the main points and to subordinate the others.

No general rule can be given that will prove so helpful as a systematic method developed by the individual himself. General rules can serve very little purpose except as guides in the process of analysis. One writer on the subject of analysis has suggested a method by which any business problem may be taken apart. "The four steps in the systematic approach to business problems: first, elimination—or at least recognition—of the personal factor; second, separation of the problem into its constituent problems; third, listing the factors; fourth, taking a fresh point of view." (Cf. Shaw, "Approach to Business Problems," Chapter II, p. 18–22.) These general directions show the essential difficulties in the way of a clear and disinterested analysis of a business problem. One is too likely to consider the problem in its direct personal relationship to get a fair point of view. A problem to be attacked in the right attitude must first be abstracted from direct personal relationships. If this can be done, it may then be possible to take this problem apart and find out what the "constituent problems" are. Such suggestion as this may help the business man to approach his own individual problems more systematically.

The primary purpose of all business analysis, as is true of every kind of analysis, is to isolate the issues in the case. These issues will be the essential points of contention in the settlement of a policy or a course of action. In every business problem there will appear three kinds of issues. There will be first the issue of fact. This means that one must know the concrete data in the case and not depend upon rumor or hearsay. The business world is constantly filled with unreliable rumors that grow with repetition and frequently prove absolutely unfounded in

fact. This is especially true in times of emergency or uncertainty where market conditions are liable to sudden, unforeseen changes. No business investigation can make progress safely and surely without making first a careful survey of the actual facts. The question, then, of what is true and what is false must be answered.

But, after the facts have been determined, there still remains the issue of what should be done under the circumstances. This question may be called the issue of policy. Whether the actual facts are favorable or unfavorable, there may be certain conditions that will modify the individual business policy. For example, there may be the question of using trading stamps as a method of advertising and increasing patronage. The facts may show clearly that this method will increase cash business. This result is, of course, the one to be desired by the merchant. He advertises in order to increase his business. The facts may also show that this added business is secured with little additional cost; in fact, the costs of advertising in other ways may be cut down enough to pay for the trading-stamp system. And yet in spite of all this, it may still remain an open question of policy as to whether the merchant should use this method or not. There has been much public antagonism to the use of trading stamps; many powerful trade associations have strongly opposed it. It may be, indeed, only a temporarily successful method of increasing business. This second issue of policy must then come up for consideration.

There is also another issue that attaches to business problems of whatever character. This may be called the issue of theory. On broad, general grounds what are the economic principles underlying the business practice? The theorist is the man who considers the long-time, or

social, point of view. He considers that a business is founded as a permanent institution and not as a temporary matter. He says that there are not only local and national influences, but that there are world-wide forces bearing upon every individual business. The theorist is the man who talks in abstract terms of supply and demand in the world market, of world-wide tendencies, of long-run policies that control the business destinies of nations, and that bring about their changes regardless of any individual concern. No manufacturer or merchant can disregard these economic theories.

It is possible to reduce every kind of business problem to the terms of these three issues. This is, in fact, the goal of commercial analysis. "The important thing is to isolate the issues in the case. To this end an analysis of the arguments shows that they fall into three groups. First, the issues of fact; second, the issues of policy, and third, the issues of theory. The issues of fact are to be settled by investigation, by a cold, unprejudiced analysis of accurate data; the issues of policy are a matter for the individual judgment of each merchant or manufacturer, unless the policy runs counter to public safety, health, morals, or general welfare; the issues of theory are within the province of definition and logic and demand sound premises." ("Journal of Political Economy," Volume XXIV, p. 932.)

Determining the Unit. The next step in the definition of the business problem is to fix upon some definite unit in terms of which the phase of the problem may be expressed. The kind of unit will very largely depend upon the purpose in view. There are, in general, two classes of units that may be used. There is, first, the unit of individual things. This is determined by counting the actual num-

ber of individual things in the group. There are, for example, so many bushels of grain, so many yards of cloth, so many dollars in money, or so many pounds in weight. The other kind of unit is called the measurable unit and is to be applied to the quantity without regard to individuality. There is, for example, the length or the capacity of a container. The first type of unit has two subclasses, one of which is called the unit of "natural kinds." These are the individuals that make up the generally accepted groups which are familiar from common observation. Census reports that give the number of people on the basis of age, or sex, or nationality, may serve as illustrations. It is clear that the usual method under this kind of unit is simply counting. The results should appear in the form of precise data. It is unquestionably true that facts of this kind have the highest statistical value. The second kind of unit under this group has been called produced kinds and produced qualities of things. The classification on this basis depends upon the purpose in view, or on the use or the function of the units. There is, for example, in the cotton manufacturing industry, the spindle which is used as a basis of all data bearing upon this business. In the handling of raw cotton, the five-hundred-pound bale is likewise the unit of weight. In the construction of ships all progress is expressed in terms of the number of rivets driven. Clearly these classes are not fixed or objectively definite. They have been assumed for a given purpose because the results secured on this basis are most intelligent from the point of view of this unit.

In the second general group of measurable units, there are also two subclasses. There is, first, physical measure such as the length, or breadth, or capacity, and there is

also the measure in terms of money value. In the case of physical-measurement units, the size of the unit is merely the result of accident or general convention. The foot and the yard and the mile might just as well have been other terms of other values. In Europe people speak in terms of kilometers and we speak in terms of the mile. They use kilograms and we use pounds. There is no fundamental reason why force should be reduced to the terms of horse power, and yet such is the general acceptance of this country. Practically it does not make much difference what the unit is in physical measurements of this kind. "There should be some common or familiar standard. What it is, matters little." (G. P. Watkins quoted in "Copeland's Business Statistics," p. 34.) It should be noted also that measurements of this kind always involve abstraction. This is obvious when one compares the method of counting individual objects with the method of measuring quantity. The final unit appears in terms of monetary value. This is a familiar method among business men. They are accustomed to express in terms of dollars and cents many abstractions, such as services of labor or the professional advice of doctors and lawyers.

It is clear from this general survey of the subject that the important thing is to select the kind of unit which will prove most serviceable in the investigation which is to be made. This unit should be clearly defined and should be of such character as to permit accurate and general comparison. One great value to be derived from commercial research is that it enables merchants and manufacturers to compare business methods and business costs in order that waste may be eliminated and more efficient practices may be obtained.

It is not always an easy thing to discover the most serviceable unit. Take the matter of determining the sales quota for traveling salesmen. On what basis should a salesman be judged? In other words, what is to be the unit of measurement for him? A recent investigation into this subject was made upon the individual salesman who had been appointed to a well-defined district, the unit of time being taken as one year. The unit, therefore, is a complex one and is made up of the individual salesman, the sales district which he is to cover in the course of a single year, set in the framework of the countless influences at work in that field. This may be very indefinite and vague and may prove to be unfair in the returns secured. Another investigation had for its purpose the determining of the annual sales of the average sales person. "This figure has been obtained by dividing the annual net sales of a concern by the average number of regular sales people, certain rough but fairly well-tested equivalents being adopted for the extra sales persons." ("Bulletin of the Bureau of Business Research," Harvard University, No. I, p. 12.) It will be observed once more that, in this case, the unit is not a single or simple one but is made up of several parts. The more complex the unit, the more difficult will be its application. The investigation just referred to divided the cities of the country into those under fifty thousand, and into rural communities. These units are even more vague and indefinite than the others that have been mentioned. It is possible to classify stores on the basis of the number of sales people employed. For certain purposes this might prove to be the best possible unit. Another way of looking at the same business concern is to put them in classes on the basis of the amount of business done within a given

period. This unit may in certain cases prove to be the most convenient.

The manufacturing establishment may be tested on the basis of machine hour, and for certain purposes this unit may prove to be the most serviceable. From another point of view it may be judged on the basis of the labor hour with the best results. Agricultural implements are classified on the basis of two different units; on the basis of horse power and on the basis of drawbar power. For certain purposes one of these units would be much better than the other. The farmer desires to know the capacity of a farm tractor, for instance, on the basis of its drawbar power and not its horse power. To him it makes a very essential, practical difference.

Another unit for judging business facts is the percentage unit. This is probably best illustrated by the government crop reports. These returns are never intended to be absolutely accurate. At best they may be called "intelligent estimates." These estimates come in from thousands of individual sources where experts have passed judgment upon crop conditions. These experts express their judgment in terms of an arbitrary and imaginary standard. There is in mind, more or less clearly, an ideal condition in the development of certain crops. This is called "100%." It means, as definitely as it can be interpreted, that there are no influences, either of weather or insects or climate, to hinder the normal development of the farm crop. But if the expert can detect any one of these influences, a certain per cent is subtracted from the ideal condition. A report on the wheat crop of a certain locality may be, therefore, expressed as "78%." This means that the judgment of the expert has subtracted 22% from the ideal condition because of unfavorable influ-

ences which he observed in the grain fields. On this same basis it is possible for a crop to be more than "100%" perfect. There may exist extraordinary conditions for its development. The grain crop in Kansas, for example, may be reported as "104%."

Such figures as these cannot represent absolute values. Under a unit of this sort, everything must be relative. This method of expressing values is always comparative. Present conditions are always taken in relation to past conditions. No expert on farm crops could have any clear conception of an ideal crop condition except from past experience. Under the percentage unit of value such must ever be the condition. If the manufacturer or merchant desires to use this unit, he will have in mind the comparison of present conditions with those of the past. For some purposes this may be the best possible unit to use.

Elements of Error. In all business data there are sure to be elements of miscalculation, of error. One primary duty of business analysis is to eliminate in so far as possible these erroneous characteristics. There is a general principle now in business that no salesman's reports on market conditions can be accurate. "The principle is as old as the hills — no man should be permitted to audit the value of his own performances." (E. S. Lewis, "Industrial Management," November, 1916, p. 735.) In all business statistics of this character the bias most frequently found is self-interest. The difficult problem is how to eliminate such an element of bias. A simple method is to have some kind of a check on the facts as they appear. It is possible, for instance, to make a different grouping of the data. If it is possible, the check that should be used is one of opposing interests. The salesman, for example, desires to put his best foot forward. He is, let

us say, temperamental and he is too much affected by the influences in his market. If somebody whose interests tend in the opposite direction could present some data for comparison, it is very possible that one set of facts might offset the error in the other. It is true of all business data that "the total can be no more accurate than its most faulty item."

The element of error that enters into business statistics is of two kinds. One is called the unbiased error and the other is called the biased error. The latter means that the element of error running through the data tends always in the same direction. The larger the number of items, therefore, the greater will be this error. It multiplies itself by repetition. It is obvious that, if a salesman is influenced by self-interest, if he overestimates the market, every estimate he may make will contain the same kind of error. The longer he goes unchecked, therefore, the greater will be the sum total of his error in the material.

This kind of an error is illustrated in many everyday experiences. There are, suppose, in the retail store the incorrect scales. Every time these scales are used the error tends to accumulate. Suppose they make an underweight; then on each purchase by the customer the error runs in the same direction and continues to gather in volume the longer the scales are used and the more frequently they are used. In case the error is in the opposite direction, the principle holds in exactly the same way. There are, also, cases of careless weighing, particularly in the presence of a customer. Mere carelessness in general might tend to correct itself in the long run by going astray in both directions. But where the customer is standing before the counter watching with keen interest the process of weighing out the commodity which is being

purchased, the human tendency would be to make the weight generous. This, too, is a biased error tending always in the same direction and accumulating a greater volume the longer it goes on. In many retail stores there is carelessness about the measuring of cloth. Where a pattern calls for so many yards it is absolutely essential that this quota be reached, but everything over is of no material advantage. Nevertheless, there might be again the general tendency to give a liberal measure.

An instance of this kind of error has recently been found in the experience of milk dealers in one of our large cities. Some of these dealers have built bottling plants in the country to which milk is carried directly from the dairy farm and where it is weighed at the time of purchase. In this case all the milk is bought by standard weight on a standard basis of butter-fat content. Other milk dealers have their bottling and pasteurizing plants in the city, to which the milk is shipped by the dairymen in large cans. These milk containers have been carefully standardized so that the measure is sure and definite so long as it is in nowise altered. But the experience is that these milk cans are handled in a careless way, especially when they are returned empty. They are sometimes thrown on the platform or on the ground, and as a result receive heavy dents in the side. After a little use these cans no longer contain a standard measure. Experience has shown that where the milk-can measure designates sixty gallons, the actual measure will reach about fifty-eight, due to the denting of the cans. This, again, is a cumulative error and must be corrected or else it will constantly increase to the detriment of one of the parties.

To offset errors of this sort in actual business, there has come a strong tendency toward the use of standard-

ized and package goods. In some retail establishments the difficulty is met by actually weighing out during the periods of the day, when few customers come in, such things as sugar, coffee, and other goods bought in bulk. In this way all the psychological tendency to error is eliminated. It may be said that all wasteful and careless methods in retailing will contain an element of biased error, and that careful, standard methods will tend to counteract these. That this error is not confined to any one kind of business activity is shown by the fact that even construction engineers who work by apparently mathematically correct formulas always insist upon adding a percentage of error; in many cases this is a ten-per cent difference. In almost all kinds of well-organized business there is a percentage of safety included in the calculations. It is this safety factor that is supposed to take care of the cumulative errors in the business. This percentage runs from 10% to 25%. In one business, for instance, it is claimed that there is a margin of 25% through which range the price may move without substantially affecting either the producer or the dealer. Within this range there is a possibility of undetected error.

The unbiased error is the one that stands an equal chance of going in either direction. Where it is impossible to count the actual units under consideration, if these units are selected at random without any personal interest or other single influence to cause a drift of error in a given direction, the resulting figures will tend to be representative of the total number. This may be illustrated by the so-called "intelligent estimates" made by the Department of Agriculture on crop conditions. In this case there are thousands of reporters from various sections of the United States whose judgments are individual and may

miss the correct deduction either by an overestimate or by an underestimate of actual conditions. In a case like this there seems to be an equal chance of the individual judgment falling on the side of the overestimate or on the side of the underestimate. Another example of this kind of error is to be found in the investigation made of a large city market by one of the leading newspapers. The method used here was to divide the entire city into districts; the outlines of these districts being determined by such conditions as the nationality groups, or economic groups, or by simple accident of physiography such as canals and river and factory sections. It was argued that these districts would be representative of the entire city, because the errors arising from certain ones would be offset by errors in the other direction arising from other districts. When an examination was begun of the character of these districts, the same problem arose once more. It was not physically possible to interview every human being within these areas. There was need, therefore, to select certain individuals out of the actual number and to make these individuals represent the whole. Again the argument ran that this basis was a sound one for judgment, since the individuals were selected largely by chance and therefore the likelihood of error in one direction was counteracted by the likelihood of error in the opposite direction.

In the same way it might be possible to test the character of water in one of the Great Lakes by taking a quantity of this water from various points around the shore and from various spots in the middle, mingling these all together, and testing the sum total. This, it is claimed, would give a fair estimate of the great mass of water in the lake. This is the law which runs through all things.

A further discussion of it will come later on. The purpose here is simply to illustrate a kind of error which is sure to rise in the use of business statistics. Wherever it is possible to know that all influences working to accumulate errors in a single direction either have been eliminated or have been balanced by influences working in the opposite direction, the error contained in the material may be called unbiased.

Eliminating Errors. The chief problem before the one engaged in commercial research is not merely to determine the kind of error that his material contains, but to eliminate the error from these facts. As has already been said, one simple method of correcting the biased error is to change it into the unbiased form. If, for example, the reports of a traveling salesman or any other investigator are discovered to contain an element of error of this kind, where self-interest or some other individual factor has constantly tended to accumulate the error in one direction, it is not difficult to overcome this trend by checking up these reports from other sources which would tend to the opposite kind of error. The salesman, or investigator, may be overoptimistic. If so, his calculations will tend to be too large. To counteract this biased error it is necessary to get data bearing on the same subject from some source that will tend to underestimate the facts. This may be done by means of a special investigator, or a few direct questions from dealers in the district may bring the underoptimistic facts to correct the error. If there is no other way, it is possible to discount the facts by some arbitrary figure. In any case it is clear that the data must be used with a realization of the error which they contain.

Where the material is affected by the unbiased error,

the principle to be kept in mind is that the larger the number taken, the smaller will be the final error. Where the material is of a very diverse character, it is necessary to inspect a larger representative number than where the material is more nearly homogeneous. The theory underlying this method is that there is an equal chance for the error to run in either direction, so that the underestimate will tend to equal the overestimate, and prove representative of the entire number.

It is with these two kinds of errors that the business investigator must cope. His first duty is to identify the character of the error and his second responsibility is to eliminate its effects from the final results. Frequently a use of commonsense methods will be a sufficient corrective. It may be necessary sometimes, however, to devise new methods in order to overcome the errors entering into the final results. It will be a test of ingenuity to discover new and satisfactory corrective measures. The mere identification of the error will go far to suggest a means of overcoming its effect.

Statistical Averages. "Statistics," it has been said, "largely deals with averages and these averages may be made up of individual items, radically different from each other. In the average these irregularities all are swallowed up. Methods of analysis have been devised which partially obviate this defect, but no system which makes a large and complex group intelligible to the mind at a glance can avoid effacing most of the minor irregularities. . . . Statistics from the very nature of the subject cannot and will never be able to take into account individual cases." (W. I. King, "Elements of Statistical Method," p. 34.) The term average is a familiar one in the language spoken on the street. Most business men are ac-

customed to think in terms of averages. This is in fact a method of leveling out the divergencies of the complex economic material which must be used in the forming of a business policy. The process of averaging may be defined as the effort to reduce data to a common standard or level. "An average," it has been said, "represents the culmination of a process of thought." (Secrist, "Introduction to Statistical Methods," p. 288.) Since the greater part of business facts is made up of estimated values, or of figures based upon estimates, the use of some kind of average is essential in business research.

Business facts are exceedingly complex. Many of them are intangible in character; they are constantly shifting and changing because business itself is a dynamic force. Business conditions that remain constant are stagnant conditions and are, therefore, not to be desired. A part of the great and interesting game of business is this element of change. With such varied, dissimilar, and complex data one can deal satisfactorily only by means of summarizing expressions. An average can "bring to focus in a single expression the dissimilarities and peculiarities of data." (*Ibid*, p. 377.)

Because of this character of business facts, men are accustomed to reducing, consciously or unconsciously, their knowledge to some kind of average. The human mind cannot at one time visualize a great mass of dissimilar facts. At least no judgment can be determined until these facts have been brought to a focus. It may also be noted that the essential use of business data is to make comparisons. If one is to learn from his past and present experience in planning for the future, he must make these comparisons intelligently. "For focusing of judgment which comparison requires, concentrated or sum-

many expressions are necessary. We seek for units of analysis here as we sought for units of collection earlier. Data in all their inclusiveness and in all their detail cannot readily be compared as between periods, times, or conditions. Some single expression which gathers into itself all the significant characteristics of complex data is required. We seek in actual life for an average performance, an average load, an average student or clerk, an average day, an average market, average conditions, etc., in order to bring things into relation." (Secrist, "Introduction to Statistical Methods," p. 235.)

It is probably the case that the business man is constantly seeking an average performance not for that average in itself, but in order that he may use it as a standard of measurement or as a guide. No business manager is content to have a group of merely average sales people. He will call them mediocre. But if he has some data for determining what an average person can do, he will likely use this as a minimum standard and seek to have his force exceed this minimum as far as possible. The average, then, becomes to him a kind of measuring rod.

There are several advantages which may be derived from reducing business facts to some kind of average. The first and most obvious advantage is that the average gives a "concise picture of a large group." This enables any one interested in the subject to grasp at a single glance the significance of a large group of facts which would require a long period of time for individual examination. Not only should the outlines of this group be clearly in mind and therefore more easily grasped, but the relationship of these facts to others may be more quickly understood. Another advantage arises from the clearness with

which an average shows the characteristics of a group. This is the ability which is afforded for comparing one group with another, no matter how diverse these groups may be. Averages must rest upon the common standard, even though the units making up the groups are very dissimilar. A further advantage is secured by the use of averages in that the whole group has been reduced to an "arithmetical concept." This may enable the mind more readily to picture the data than would be possible if all the individual units were observed. If the average is a correct one, it is possible by means of it to economize time and attention by using the specimen data which it affords rather than the entire group. (Cf. King, "Elements of Statistical Method," pp. 121-2.)

There are several kinds of statistical averages which may be used in business investigation. The one to use in any particular case will depend very largely on the purpose in view. It is necessary, however, for a broad understanding of the subject to know the character, the limitations, and the advantages of the various kinds of averages which may be employed. The discussion here will treat: first, the simple arithmetical average or mean; second, the weighted average; third, the index number; fourth, the median, and fifth, the mode.

Arithmetic Mean. The arithmetic mean is easily secured by dividing the total by the number of units. If, for instance, there are twelve items of varying numerical value, their mean is obtained by adding together these items and dividing by twelve. It is obvious that this method of obtaining an average of the group gives to each item an equal value; that is, each one of the twelve is considered as a single unit whatever may be its character. In a case of this kind the total possible error is

equal to the arithmetic average of the individual errors. This means that if the points above the arithmetic average or mean are marked "plus" and those below are marked "minus" and are then added together, the final result, whether plus or minus, will give the average error.

This simple test shows very clearly the working of the unbiased error in business statistics. Those items which are above the average are counteracted at least in part by the items which fall below the average. As their sum approaches zero, the arithmetic average approaches absolute accuracy. This test also reveals the degree of variation that exists among the several items. If these variations are violent, the need of a large representative number becomes apparent.

The advantages which an average of this kind offers are readily seen. In the first place it is not difficult to find it. The whole process is a simple one. It is desirable, of course, to use a principle which can thus be easily and accurately established. In some cases it may be desirable to show the cases of extreme variations in data. When this is so, the fact is at once revealed by an average of this kind. Very effective use, also, has been made of the arithmetic average in a presentation of statistics covering the entire United States. The Federal Government has computed the crop production on the basis of the arithmetic average. So much wheat is grown in the United States on the average per acre. This enables a ready comparison with foreign countries, but of course even here very much is left to be added before a complete comparison is made. This average is frequently used also in the case of prices, or in the case of rainfall.

There is another fact in favor of an average of this character, namely, that it is the most familiar one to

business men. Nobody needs to explain how it is to be obtained or what it is. The mind runs readily enough into averages of this kind. Very excellent use is made of the arithmetic average in figuring the per-capita consumption or production of various commodities. If the total number of live stock in the country is ascertained from government reports, and the total number of people in the United States is known, it is possible to derive the average number per person.

This average has its limitations. Unless the extremes in variations are known, it becomes difficult to locate the exact mean. Frequently, also, it is not desired to emphasize extreme variations. In such a case the arithmetic mean will not serve. When the items in the group cannot be measured in the same units, the arithmetic mean will not serve. It is also clear that this average is a mathematical abstraction; it often falls at a figure that represents no actual case. It is, for instance, absurd to say that the average size of family on the farms in the United States is 4.5 persons. And yet the arithmetic mean may make necessary the use of such figures.

The arithmetic mean or average has frequently been applied to wage statistics. In most cases this use has been misleading. The average wages in the steel industry, for example, might show a figure which in fact was well above the amount that more than half of the workers received, due to the very large wages received by a few skilled workmen. In the same way the average income of the inhabitants of a small town might be increased far above the ordinary level by the presence of a single millionaire. Such an average, therefore, would not be an indication of the general purchasing power in that community. It would obviously give a wrong picture.

The Weighted Average. There are cases where the simple arithmetic average will not represent the facts fairly. It will be remembered that under this average every item is of equal importance. There are instances, however, where this is not the case. Some of the items are of much greater significance than others. In order to give expression to this difference in value, there is a modification of the arithmetic average. This modification is called the weighted average, by means of which the aim is to give each item the influence that its varying importance deserves.

An illustration will make clear the distinction between these two kinds of averages. Suppose, for example, one desires to calculate an average price of a certain kind of goods. Assume that twenty pounds of a certain commodity are sold at ten cents a pound, and that ten pounds are sold at sixteen cents a pound. Under the method of calculating the arithmetic mean, or average, the average price would be found by adding together ten and sixteen and dividing by two. The result would be thirteen. The conclusion, then, reached under this method is that thirteen cents is the average price. Obviously, this does not represent fairly the circumstances under which the goods were sold. Twenty pounds at ten cents a pound may have more significance than ten pounds at sixteen cents a pound. In order to give these items the influence which their varying importance deserves, it is necessary to use a weighted average. This weighted average is found by the following method:

$$\begin{array}{rcl}
 20 \text{ pounds} & @ & 10\text{¢} = \$2.00 \\
 10 & \text{"} & @ 16\text{¢} = 1.60 \\
 \hline
 30 & \text{"} & = \$3.60
 \end{array}$$

It will be seen that 30 pounds is the total number of pounds sold and that \$3.60 equals the total receipts. If now, the \$3.60 be divided by 30, the total number of pounds sold, the result will equal 12, the weighted average price. The difference between this average price and the simple mean price found under the former method is one cent. This difference may frequently be of very great significance.

It will be noted, however, that the underlying principle of computation in determining these two averages is the same. The difference comes in treating each item that goes to make up the series. In the case cited above the twenty pounds were multiplied by ten in order to give this item its true importance, and the ten pounds were multiplied by sixteen in order that this item might be reduced to the same basis. This act of multiplying each of the items for the purpose of giving each its true significance is called weighting.

There are, no doubt, many cases where the simple arithmetic mean will serve the purpose in view completely. In other cases it may be necessary to give some kind of weight to the individual items. An example of where the weighted average is necessary to represent the case fairly is the calculation of average wages among workmen of different classes. In general, where there is a wide variation in the items, there is a tendency for an increased use of the weighted average. Considerable criticism has been offered as to the method of quoting the price of stocks on the exchanges because these lists do not represent the weighted average and thus give due importance to the items included. It makes a great deal of difference whether the number of shares, together with their prices, are given due weight in the price lists.

A very curious illustration of the use of the weighted average is to be found in the method of the United States Weather Bureau where it computes the average rainfall. In this case a weighted average is used and the weight, as it may be called, the element which is used to give true significance to each item, is the population of the various districts from which data have been secured. Thus, the average rainfall in the United States in 1870 was 42.5 inches, and in 1890 was 41.4 inches. These averages do not mean that less rain actually fell at the latter date than at the former date. It might well be that more rain fell in 1890 than in 1870, but measured by the density of population, there was a decrease in rainfall. The reason for the use of a weighted average in this case is clear. The rainfall in the United States is of peculiar significance in its relation to the effect upon population. The sparsely settled regions are thus minimized. The regions of great concentration of population are thereby given their true importance.

Index Numbers. There is one kind of weighted average that has been used effectively by many business men in showing composite results. These are the so-called index numbers. Such numbers are reckoned from a more or less arbitrary base which is assumed to be 100 per cent. From this base the index numbers may vary in either direction above or below. This device has been used most frequently in regard to prices, but it has a wide application. It is possible to reduce to an index number such things as wages, rent, or sales. "The purpose of an index number is to reduce to a common denominator the qualities of different factors or phenomena so as to allow comparison generally historically. It is to translate absolute into relative qualities, in order that compari-

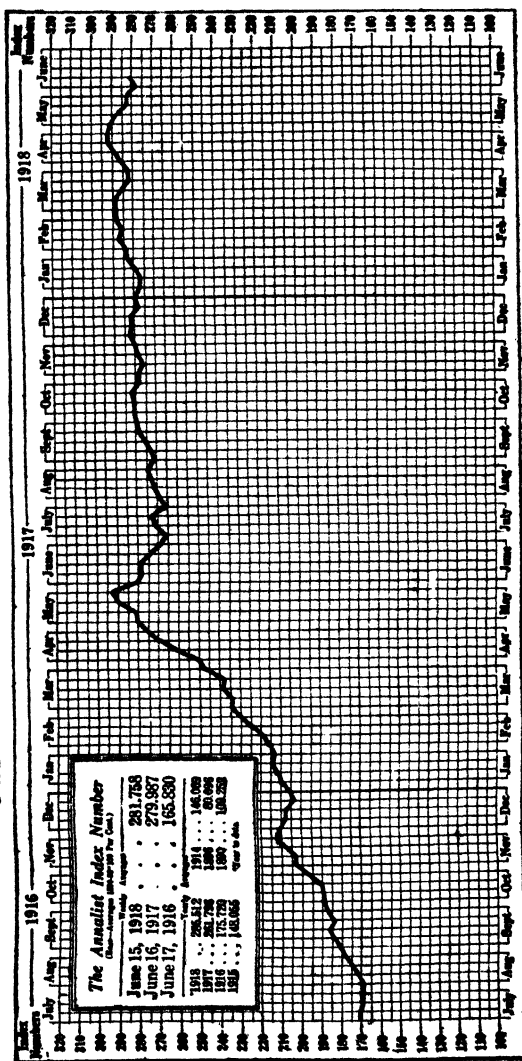
sons may be made." (Secrist, p. 287.) Such numbers as these are always used to show relative movements or composite forces. In order that data may be reduced to an index number, they must have common qualities.

The constructing of an index number need not be a difficult matter. A single, definite unit of time, for instance, as a week, or month, or year, may be taken as the basis for reducing sales to index numbers. These sales may be of a score of different articles. But suppose that their sum total during the month of March be assumed to represent 100 per cent. Then with this as a base, the sale of these same commodities for any and every other month may be charted. Such a device as this does not, of course, solve any business problems. It cannot show the details of the situation. The very best that it can do is to picture with a high degree of vividness the tendency. The main purpose of index numbers is to show general drift.

The business man in taking up his problem must consider it from the point of view of the value or importance of the particular items. It is necessary to inquire first whether a simple mean or average will show all that needs to be shown in the analysis of the material. No general rule can be offered that will cover all cases. The question can be answered only by a knowledge of the facts and of the purpose in view. A thorough understanding, however, of the two kinds of averages and the methods by which they are determined should prove of great help in deciding which one is to be used in any given case. "The question whether weights are to be used or not, cannot, therefore, be decided in general. The answer depends on the question of the relationship between the items and their weights." (Zizek, "Statistical Averages," p. 163.)

The Median. Another kind of statistical average which

Curve of the Cost of Living



The Movement of Stock Market Averages

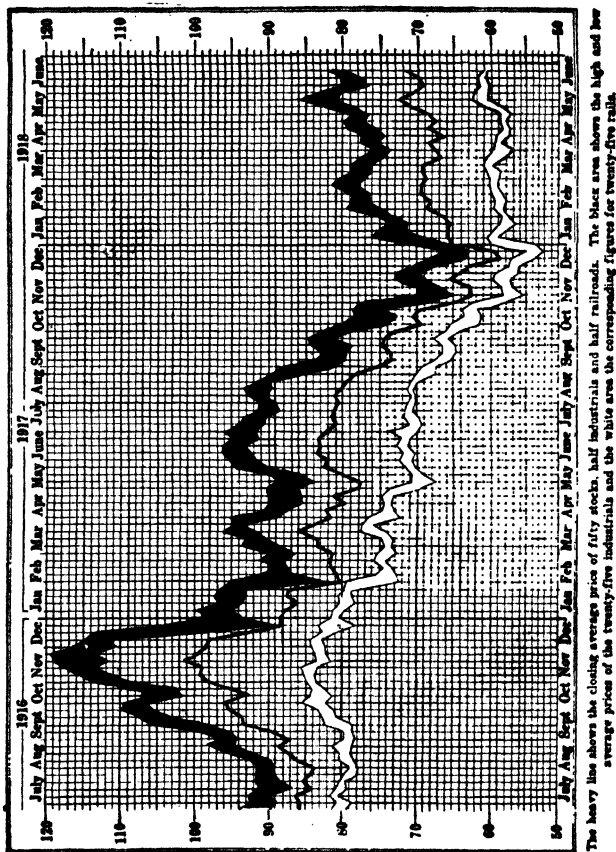


FIG. 1a

has been developed particularly in the study of mortality figures, is the so-called median. In order to determine this average it is necessary to arrange all the items according to some standard. This standard may be of any

TREND OF PRICES PAID FARMERS FOR BEEF CATTLE

May 15, 1914, to May 15, 1917

Based on Average Prices throughout the United States as Quoted by the
U. S. Dept. of Agriculture

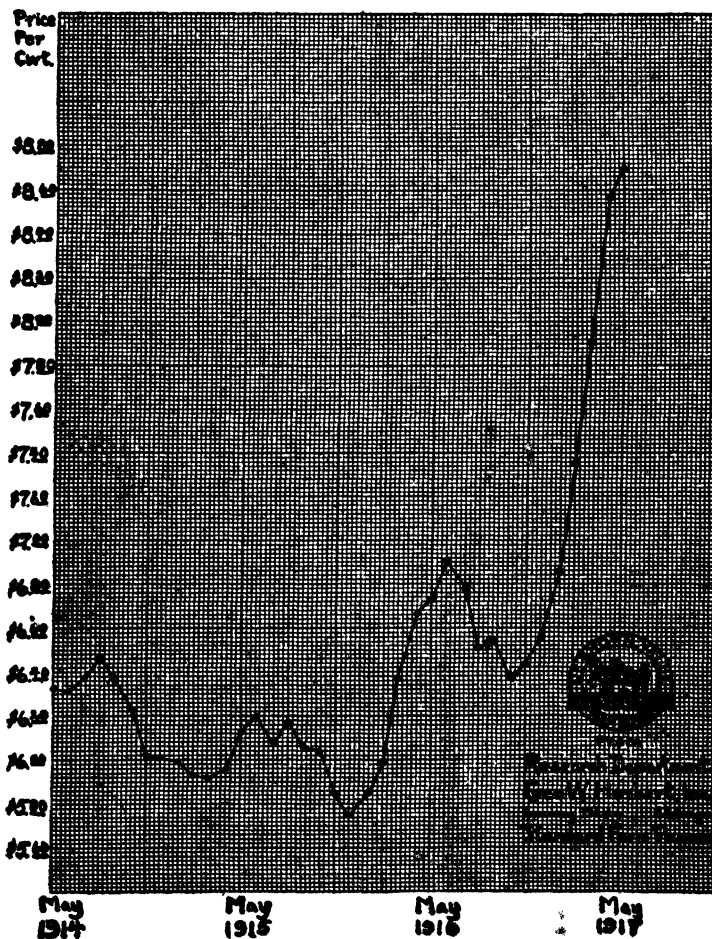


FIG. 1b

TREND OF PRICES PAID FARMERS FOR HOGS

May 15, 1914, to May 15, 1917

Based on *Average Prices* throughout the United States as Quoted by the
U. S. Dept. of Agriculture

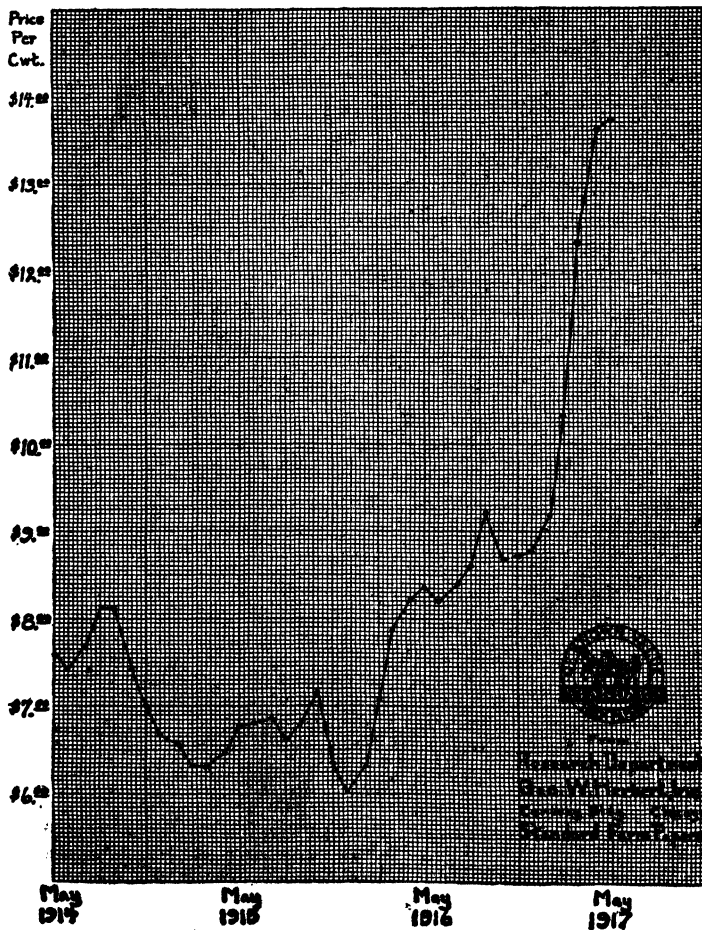


FIG. 1c

kind, but it must be of such character that the items will form a series. For example, men may be arranged in the order of their height and thus form a series based upon that standard. In this case it will be seen that the items are, in the first place, of the same class, and in the second place, of varying quantity, on the basis of the standard used. All other characteristics of the individuals have been eliminated for the purpose of comparing them on the basis of this one standard. If a group of individuals has been arranged in a series of this kind the individual that holds the central position in the series is called the median. It is obvious that if there is an odd number of individuals in the series, the middle one becomes the median. If, however, the series is made up of an even number of individuals, this median lies between the two middle ones. In this case the exact median can be found only by calculating the arithmetic average of these two.

This median may be called the central figure in the series arranged on the basis of some chosen standard. Statisticians have sometimes pointed to the median as the probable value of the whole number of observations taken. In this sense the median becomes a representative number of all the data that have been accumulated. This average may well be termed the halfway house. If one is climbing a hill and finds halfway up the face of this hill a resting place, he may appreciate this fact very greatly because of the relief which it brings him. He may also carry away from his experience of hill climbing a very comfortable sense of this halfway house. It has a definite meaning for him in his climbing experience. When he descends he may look forward to this place as marking the halfway station in the descent. Nevertheless, it must be noted that this halfway house gives no indication of

the steepness of the hill, either above or below. The only thing that it does indicate is that half the hill lies above and half the hill below. One must know the entire journey to have any clear understanding of the roughness or steepness or difficulty of the way.

The median has certain advantages over the arithmetic mean in that it is wholly independent of extreme cases. In this sense the median may be said to be more typical than the mean. Take, for example, the average incomes of a large group. Under the calculation of the arithmetic average the income of the millionaire will balance hundreds of incomes of the laborers. The importance, therefore, of these individual items is lost to view. With the median on the other hand, the millionaire has no more importance than any other individual. It may be said in general that the median is just as characteristic of any group as the arithmetic mean and is much easier to determine. (Zizek, "Statistical Averages," p. 199.)

To the business man this type of average may become of practical importance in attempting to calculate the typical price or a fair and reasonable sales quota, or in representing the reasonable requirements as to the size of territory to be covered or as to the number of miles to be traveled by a salesman. If the different items appearing upon these points are arranged in a series and the central item is selected as the typical or reasonable or fair standard, the judgment may well be a sound one. One statistician has said that "on the whole the median is one of the most valuable types for practical use and for studies such as wages or distribution." (King, "Elements of Statistical Method," p. 132.)

It should be pointed out, however, that the median should be carefully examined in order to see whether part

of the data, as a central figure or middle point, is in any way extreme in relation to the number of items. Obviously, if this central item stands out as being unique in any respect from all the items surrounding it, its typical character is gone. As a matter of fact the median is characteristic or typical only if it occurs at a point of concentration. If this is the case, and if the median is typical or characteristic of the entire group, then it may serve as an efficient method of reducing to a single figure a very large group of data and may aid in visualizing more clearly and in studying more carefully the mass of varying material.

There are some cases where this kind of average is the only one that can be used. These cases occur where it is not possible to reduce all the items to figures. If the facts are not all definite, or are uncertain in regard to some specific items, the median then comes in to aid the investigator to overcome these difficulties. (Cf. W. C. Mitchell, "Gold, Prices and Wages On The Greenback Standard"; Irving Fisher, "The Purchasing Power of Money"; Edgeworth, "Report of British Association for the Advancement of Science," 1881, p. 91.) A good example of this kind of situation is to be found in the reports on the trade conditions that are frequently published by financial and commercial papers and magazines. These reports do not come in the form of numbers but as vague and general terms, such as "good," "fair," "excellent," "slow," "poor," "bad," etc. Obviously, terms of this character cannot be dealt with in the same way as figures. If, however, some sufficiently definite idea may be attached to each term, then these terms may be arranged in series of which the central one will be the median. On the basis of this series a tabulation may be

made and the typical or characteristic condition determined.

As an example of the median there is given below some figures representing the range of prices. It is to be noted that these figures are in a series with the lowest one first and then rising step by step to the highest. In this case the fifth item is the median; that is, \$4.00. It may be noted, also, that this figure is \$2.00 greater than the smallest item and \$4.00 less than the largest item. Furthermore, the differences between the various items are not the same. In this series, also, every item has the same importance.

\$2.00

3.00

3.00

3.50

4.00

4.50

5.00

6.00

8.00

It may be observed further that the individual items in this series may change, but so long as the order remains the same, the median will remain the same. The median differs from the arithmetic average in this case appreciably. The latter would be \$4.33. (Cf. Secrist, p. 256.)

The Mode. Another type of statistical average is called the mode. This means the point of greatest concentration or frequency in a series of items arranged according to some selected standard. It represents the greatest number of experiences. Sometimes the mode is

called the predominant, the most usual, or normal value. It is the value occurring most frequently in a series of items and around which other items are distributed most densely. "Therefore, the mode represents the most probable value of the element of observation represented in the series." (Zizek, "Statistical Averages," p. 222.)

It may be seen that this kind of an average has one thing in common with the median. The items, for example, are arranged in a series according to some selected standard, and on the basis of this standard the mode is determined. The number of items in this series must be sufficiently great to reveal a point of density or concentration. Clearly, the more numerous the items, the more exactly can the mode be determined.

There are many advantages in the use of this type of average. In the first place, the mode is never a mere abstraction as the arithmetic mean or median may be. These latter averages may never actually occur in the series. The mode must always be represented by some item. Furthermore, the mode must always be typical. With many irregularities in the items the arithmetical mean and the median may not be typical. And again, "the importance of the mode lies in the fact that it is the average best suited to represent the 'normal' or typical size of a variable phenomenon." (Zizek, "Statistical Averages," p. 225.) The mode is also useful where it is desired to eliminate extreme variations. It is convenient, too, because in locating the mode it is not necessary to know anything about the extreme items except that they are few in number. This form of average, also, may be determined with reasonable accuracy from relatively few but well-selected data. And, finally, the mode as a type is the one most familiar to the popular mind as best rep-

representing the entire group. (Cf. W. I. King, "Elements of Statistical Method," p. 126.)

The mode, however, has very distinct limitations. It is not always easy to locate. In fact, in a given series of items there may be more than one point of concentration. It is conceivable that there may be two or more points in a given series, of equal density or equal concentration and therefore with equal claims to representing the mode. In case the desire is to give due weight to extreme variations, the mode is not of service. It is, furthermore, not possible to locate the mode by a simple arithmetic process, and sometimes it can be identified only with very great difficulty by any method. Wherever too few items are included in the series the mode is not typical.

This method of average is of the very greatest value to one engaged in commercial research. Its application is very wide and very easy to make. As a matter of fact, the mode offers the standard by which all practices may be judged. The so-called "average" or common or typical experience is the mode. In a recent investigation into "the expenses in operating retail grocery stores," the data were all reduced to a mode. For example, when the subject of salaries and wages paid to the sales force in such stores was being discussed, the conclusions drawn were of this kind. "The bulk of the figures are between 4% and 8%, concentrating around 6.5%. A sufficient number of stores spend only 5% of their net sales for salaries and wages of sales force to indicate that that figure is ordinarily possible of attainment." (Bulletin No. 5, Bureau of Business Research, Harvard University, p. 8.) In a similar way the data on advertising expense were summarized by saying "the common figure is one tenth of one per cent." (*Ibid.*, p. 9.) In all other cases

the items were reduced to the same average. For example, it is said that "the total delivery expenses ranged from 1.1% to 5.9% and the typical figure is 3%" (*Ibid.*), "the common figure for rent expense in retail shoe stores is 5%, in retail grocery stores 1.3%." "The most common figure" of total expense in these stores is 16.5% with a "marked concentration of a smaller group of stores around 13%." "Net profit annually ranges between 2.5% and 5.5% of net sales, with 4.5% probably as a most typical figure." "The common figure for interest seems to be 0.8% with probably a tendency to be lower than higher." "In a majority of stores of this class the annual stock turn is from four to ten, centering around seven, which is, therefore, the common figure." (*Ibid.*)

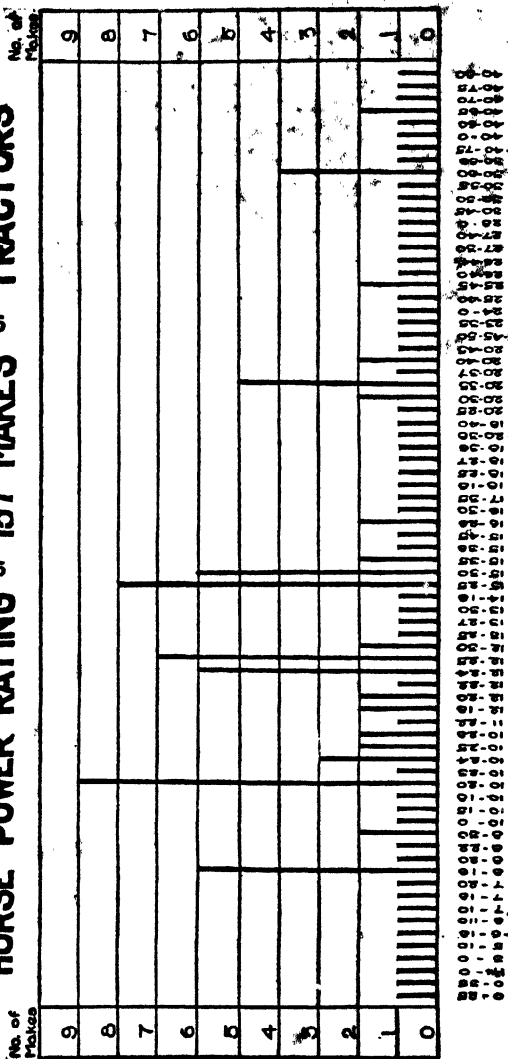
The mode is a method of calculation familiar to the business man even though he does not use this term to express it. If he speaks of the normal rate of interest, or the common wage, or the usual price, he has in mind something which corresponds to the mode. As has been said, "the statistical usage agrees with the common usage. If non-statisticians speak of a normal wage, normal income, normal price, etc., they undoubtedly think of the relatively most frequent wage, income or price. The same average is in mind when we speak of the size of an agricultural estate or establishment as typical for a certain district." (Zizek, "Statistical Averages," p. 227.)

"The mode is of special importance since it is that average which is easiest to estimate and therefore can easiest be obtained in an investigation by direct questioning. It has been mentioned that in investigations the questions asked are frequently for the 'predominant,' 'prevailing,' 'normal,' or 'usual' price or wage, and these questions are asked of persons who are considered

to be especially competent to estimate the normal wage and usual price on the basis of their experience." (*Ibid.*, p. 245.) Since the mode can thus be closely approached by judgment rather than by actual computation, it lends itself most readily to general business usage. This form of average can be closely guessed by one's own experience, even though he is not an expert in business investigations. The man who has had experience in business investigation or whose general business training has been broad and varied can estimate with reasonable accuracy this type of average from memory of his previous experience. Whether such an average will form a sound basis of business policy will depend upon the carefulness and capacity of the individual who makes it.

The method by which the mode is determined may be illustrated by the following example: "The study of 137 different makes (of farm tractors) indicates that there is very little unanimity of opinion as to what power rating a tractor should have. Of the 137 makes the largest number at any one rating was 9, and the striking thing about the chart of tractor ratings is the 56 makes, each of which has a rating different from every other." (See chart on the following page. "The Merchandising of Tractors," p. 15.) It becomes clear that the figures behind this quotation have been arranged on the basis of "ratings," which means the horse power of the tractor at the drawbar. Then on this common basis the material has been classified in order to show the point of greatest concentration. These points are illustrated by the chart. Another example may be seen from the chart of hours of horse labor demanded on the farm. The mode in this case appears in the last week in May. The common basis

HORSE POWER RATING of 137 MAKES of TRACTORS



5. Makes not Specified

FIG. 11a

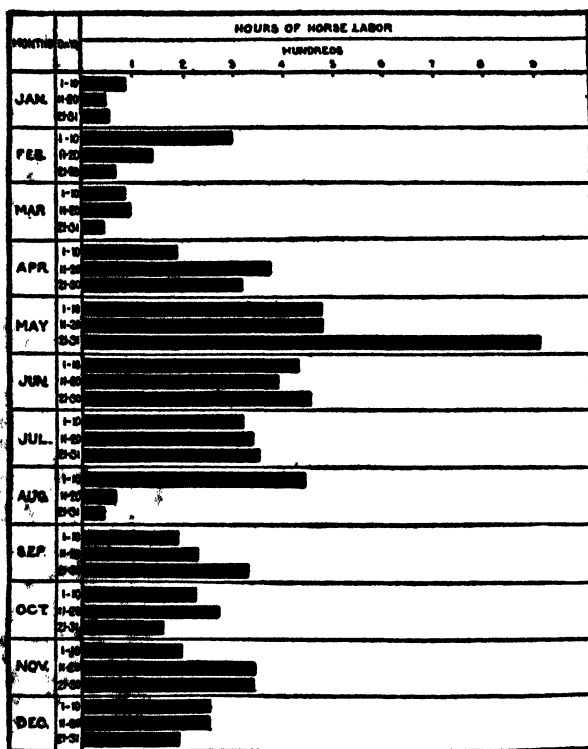


FIG. IIb

of classifying the material may be readily seen from the graph. (*Ibid.*)

The Sampling Method. There is a term familiar in business circles which applies to the forming of a judgment respecting a whole group from certain selected individuals of that group. It is a method by which a part is made to represent the whole. In principle it does not differ from other methods of identifying typical or representative items. This method is called sampling. The

word has several different meanings as used in business. Selling by sample means, of course, that the items inspected are exactly representative of the large class which has been made on the same pattern. The salesmen's samples from which orders are made are supposed to be accurate in this respect. Many commodities are graded on the basis of samples taken. A bale of cotton, for illustration, is sampled by taking a handful of cotton from the bale by cutting through the wrapping and reaching in and selecting in a chance way whatever the fingers touch. On the basis of such a sample the entire bale is graded. Carloads of grain are likewise graded from samples taken from the car. These samples are carefully analyzed by experts and placed in grades as their characteristics warrant. The entire car is classified on the basis of these samples.

As a statistical method, however, sampling is a different matter. It is true that even here, since the sample is taken to represent an entire group, the assumption is that this sample is typical for the group from which it is taken. In other words, the characteristics of the sample are an average for the group. This method of reaching an average differs from the mode in that every sample must be individually examined, regardless of where it may belong in any series. It differs from the median in the same way. The sample is not either a weighted average or a simple arithmetic average. The assumption is that these samples or specimens will contain every characteristic to be found in the entire group. No one of them is to be taken as in itself typical or representative. They are to be considered together, really as a single unit, representing all the elements which will be found in the whole group from which they have been taken.

This method is resorted to, first, when it is impossible to examine every item of the group, and second, when it is too costly or is impracticable to attempt this individual investigation. A manufacturer, for instance, will test his market as a whole by selecting a sample territory or district. The results in this selected district will be taken as the possible results to be obtained from the market as a whole. It may be too expensive to reach the entire possible market at once. Or, again, a merchant may try out his prospective customers by sending test letters to certain individuals. Their response will be taken as the basis of judging the entire group. It is a method, therefore, which may become extremely useful if one can be sure that it is used properly.

In order that the sample method may be valid, it is necessary that it be used with caution. In the first place, great care must be taken in selecting the samples. The real danger in the use of the sampling method is that a biased error may appear in the individuals selected. They should be chosen with a view to avoiding this possibility. The method of selection should, therefore, be of such a kind as to eliminate any chance of prejudice or self-interest or any other influence that will accumulate error in any one direction from entering. In the second place, the number of samples chosen should be sufficiently numerous to be representative. The entire analysis by the sampling method is an analysis for the purpose of eliminating error from business data.

A recent survey was made by the United States Department of Agriculture into farmers' incomes. Certain groups of farms were investigated in three different districts. When the survey was made it was found that these incomes could not be said to be typical or repre-

sentative because the groups interviewed were of a superior type of farmer. The sample incomes, therefore, did not represent fairly the general farm income. In other words, there was a biased error in the material collected. It became necessary to deduct from the figures a certain arbitrary percentage in order to reduce the data to a typical form. Another investigation, into retailing business, found that the retailers who could furnish the desired information belonged to the higher type of business men. Here, again, there was a biased error in the material and it became necessary to make it representative. Many periodicals have used this method in determining the attitude of their readers toward certain commodities advertised in their columns. It has not always been possible to eliminate from these investigations the biased error due to personal interest on the part of the periodicals which naturally desire to show the superior value of their papers as an advertising medium. Sampling can only be a useful method when it is used with care and when the material has been selected on the proper basis. When properly and carefully handled, it may prove of great practical service.

Conclusion. In this survey of the methods by which business material may be analyzed the various methods developed by the science of statistics have been passed in review. These methods have been defined, their advantages and disadvantages have been discussed, the means by which they may be determined have been illustrated. The purpose in view was to make clear and serviceable all the tested methods of arriving at a thoroughly sound and practical analysis of the material that had been accumulated. From this survey certain general principles may be derived that will aid in judging the sound-

ness of the method of analysis and possibly, also, will assist in determining what method should be used in any given case.

There is in statistics a general law which is called the law of averages. It may be stated as follows: "A moderately large number of items chosen at random from among a very large group are almost sure on the average to have the characteristics of the group as a whole." This has sometimes been called the law of probability, or "the statistical law of regularity." It may be seen that such a principle as this underlies the whole assumption of unbiased error. It is likewise fundamental to the sampling method. Such a principle needs no demonstration other than that given it by general human experience. The gambler with his dice counts upon the working of this law. But the gambler is only a conspicuous example of a general custom.

Another general principle assumed in statistical analysis of this character is that all individual items of whatever kind have common characteristics, no matter from which point of view they are judged. That is to say, all things are to be classified by some principle. Every statistical average is based upon a principle of this kind. The group of items which has not or cannot be examined individually is judged on the basis of this principle.

From the two general principles stated above it will follow first, that the larger the number taken, provided there is no biased error, the smaller will be the final error in the data. And also it follows that when one part of a group varies in one way, the other part will vary in the other way, so that the total change is slight. Such conclusions as these should not prevent one from observing that there may be a general increase or decrease not taken

care of by these assumptions. In the United States, for example, which is a country that has been rapidly developed within the past few years, all statistical data must take into consideration the fact that there is a general change in business conditions. As all parts of the country become more fully developed a kind of business equilibrium may be established. Until that time arrives very likely the change may occur from year to year. These changes may introduce a large element of error unless their influence is fully recognized.

There is another general principle which must be kept in mind in analyzing business data. It is this: That "the total can be no more accurate than its most faulty item," just as a chain is not stronger than its weakest link. This principle should call attention to the fact that the value of all materials depends first of all upon the reliability of the details. The character of the data will, of course, be judged by many things. There is the source from which it was derived; there are the means by which it was collected; there are the individuals who did the collecting; there is the general form in which it appeared. All of these things should be in mind when considering the value of business data. Obviously material from secondary sources has had a chance of accumulating error which material from first-hand sources has not. It therefore becomes desirable, where the material is of prime importance, to reach as far back toward the original source as possible.

This discussion of methods which may be used in the analysis of business material has employed very many terms from the science of statistics. But, after all, it would appear that the analysis of business material is nothing more than the careful and thoughtful application

of common-sense methods. In other words, the methods of business analysis are the use of good judgment based on wide knowledge and sound experience. These general principles may be stated in unfamiliar terms, but when put into actual practice they prove to be the same methods which judgment and experience always evolve. A careful study of them, however, should lead to greater accuracy and security in dealing with the complex problems of business life. There are so many influences at work and there are so many possibilities of error and the issues at stake are so important that the highest degree of accuracy possible should be aimed at. In all of this the fact must not be forgotten that business statistics generally deal with typical or average conditions. Under the law of averages the items to be judged are chosen at random and are almost sure on the average to be typical. The individual item, however, which in any given case may be the most important one, is not necessarily representative or typical. The whole problem of analysis, therefore, resolves itself finally into discovering the essential items in the individual case.

CHAPTER VIII

PRESENTATION OF BUSINESS FACTS

Purpose — The report — Useful devices — Geometric figures — Pictures — Models — Organization chart — Tables — Rules and cautions.

The ultimate aim of commercial research is a course of action, a business policy. A business man seeks a fuller knowledge in order that he may act more intelligently. He feels the need of a clearer foresight, a keener insight, and a broader vision of business affairs. His judgment will become more reliable as his knowledge increases. It is not enough, therefore, to collect or even to analyze business facts. There is a further need for a presentation and for an interpretation. Practically, it is not possible to separate these two processes, but for purposes of clear discussion they will be treated as distinct. The present discussion will deal with certain general principles relating to the clear and accurate presentation of business data. What the making of blue prints is to the architect or contractor, the presentation of business data is to the one engaged in commercial research. The methods of presentation are, in fact, the blue prints of business. But business data, however presented, will not of themselves solve the problems of the manager. They can aid immensely by disclosing and locating them.

Purposes. In the process of giving expression to the business facts that have been accumulated, there are two main purposes in view. The business man may, first, want to know these facts for himself. This means that he de-

sires to know more intimately his own affairs. In this case his analysis of business always keeps in mind the relation of these facts to himself, to his own policy and his own judgment. He may want to discover the wastes or leaks in his business and to stop them. He may want to cut down costs by means of a more direct process. He may desire to eliminate extra handling and extra charges. In any case, when the purpose of the analysis is to examine one's own affairs in order to attain a higher degree of efficiency, certain principles of presentation will need to be applied. In a case like this, the characteristics to be emphasized are exactness, thoroughness, reliability. There is need of clear reasoning, of careful logic, of accuracy in every detail.

The second general purpose of presentation of business facts may be to influence some one else. This means that the data which have been collected will be used for the purpose of persuading or convincing some one to a definite course of action. Of course, there is just as great need in this case for the material to be true as in the other. The principles, however, which will guide in the selection of methods of presentation may differ materially. In the former case the interest of the one who examines the facts may be assumed. A man is presumed to be interested in his own affairs. When these facts are to be presented to some one on the outside, no such assumption can be made. There is, then, need to present the facts in such a way as to arouse interest, secure attention, and make an appeal. While here the facts should be presented with clearness and accuracy, the emphasis will rest upon the elements of persuasion and of argument, as well as of appeal. It is worth while to keep this general distinction carefully in mind.

There will be no attempt here to cover all possible methods of presentation. The subject is entirely too broad for such extended treatment. As a matter of fact, there is a field here for all the skill, all the ingenuity and the cleverness of which one is capable. The methods of presentation may be as varied as business itself. Aside from the broad distinction made above — that is, that the methods will be conditioned by the purpose in view — there is no limit to the possible methods except one's individual capacity. This is especially true when methods of presentation are used for purposes of advertising and selling. In this field the problem is no longer one of commercial research; it is an art in itself.

“Ordinarily facts do not speak for themselves. When they do speak for themselves the wrong conclusions are often drawn from them. Unless the facts are presented in a clear and interesting manner, they are about as effective as the phonograph record with the phonograph missing.” (Brinton, “Graphic Methods of Presenting Facts,” p. 2.) There is a wise principle stated here in a clever manner which needs very careful consideration. The methods of presenting data are really the means of putting life and significance into the more or less barren facts that have been collected. There was once described a valley filled with dry bones which by a magic touch sprang into life in the form of men. The process of presenting facts is the process of giving such a magic touch to the otherwise lifeless figures.

Most men who have not given much thought to the study of presenting business data have felt that it was an exceedingly difficult subject. There has appeared to them an element of obscurity, a quality of technique which they are not capable of understanding or acquiring. As a matter

of fact this is not the case. The general principles underlying methods of presentation are simple. There is no need of a knowledge of "higher mathematics," or of calculus, or of special artistic ability in order to present business data clearly and effectively. Once more it is a case of being able to apply common-sense methods to a complex situation. A little experimenting on the part of many business men would show an unsuspected ability to resolve business data into graphs and charts. As has been said, there is a field here for a special kind of art. Just as some kinds of statistical average cannot be determined without a working knowledge of higher mathematical formulas, so here are problems which cannot be solved except by those who have had long training in technique. Nevertheless, there is much that can be done by any one who will give attention to the elementary principles underlying the various methods of presenting facts.

The Report. There are many forms which the presentation of business facts may take. It is not the purpose in this discussion to take up each kind in detail but rather to discuss the general principles which may be applied to the whole subject. In doing this, however, it will be necessary to classify the various types of methods which may be employed.

The entire work may be called by the most general term, "the report." When facts have been accumulated and analyzed it becomes necessary to bring them all together in some kind of relationship which may often appear in the form of a general report. This report may be any one of several different kinds. A business manager may desire to report the conditions of business to the president of his concern. This will mean a certain point of view and a certain emphasis in the reporting of facts. The president

may also desire to make a special or an annual report to his board of directors. The interest in this particular case will be centered in the progress of the business for the period of time covered by the report. Generally, the directors cannot carry the details of business in mind and look only for the final results. If these prove to be satisfactory, there is likely to be no further attention given to the matter. If, however, they are not satisfactory, some further inquiry may be begun at once. Another kind of report is that which an expert investigator makes to those who have employed his services. He comes to the task from the outside and aims to collect facts which will present the essential details of the business in a clear and convincing manner. The form which this report takes will probably differ in some material respects from the two just mentioned. It may be necessary for the general investigator to make a report summarizing the data which he has been able to obtain. Here, the purpose in mind will be to present facts without an attempt at drawing conclusions. In some cases there may be regular blank forms to be filled out by entering certain specific figures in the spaces indicated. A formal report of this kind requires no more than accuracy in quoting data and adapting facts to the demands of the blank that has been sent. From another point of view, there are two classes of reports. There are special reports, whose purpose is definitely limited and may often be due to some emergency in business. There is also the regular report which may come at the end of three, six, or twelve months. Such reports as this may have for their purpose a complete record of business for the given period to be assembled in a single department for further use.

A general report of the character discussed here is made

up of two parts. One part consists of descriptive matter, which may also contain the conclusions or recommendations that are drawn from the investigation; the other part of the report has to do with methods of presenting specific data. These methods deserve special treatment and will be taken up later. It is the first part of the report which demands discussion at this point.

The descriptive portion of any report aims to present the data by means of words. It is to be judged, therefore, by principles of writing rather than by principles of statistics or accounting. In judging a piece of writing there are several elementary principles to keep in mind. One is to know specifically and definitely the purpose in view. One cannot write with full intelligence unless he understands the purpose which his writing is to serve. It is this purpose that will guide in emphasis, in method of treatment, and largely in analysis.

Another elementary precept, which may act as a guide in effective presentation of material, is that the reader should know his subject. This is, of course, an obvious principle. No one can write with effectiveness unless he is thoroughly acquainted with the subject matter with which he is to deal. No investigation of business can be thoroughly done until the investigator has become intimately acquainted with the subject which he is analyzing. There may not, therefore, be need for any special emphasis upon this simple principle. The fact to be kept in view is that no report should be undertaken until the entire subject to be discussed has so formulated itself in the mind that the writer may feel complete confidence in what he says. It is this attitude of mind which carries conviction and which insures clearness in a report. It is an equipment of this sort that fills a report with illuminating

examples and clarifying illustrations. Under these conditions every general statement will appear backed up by numerous facts which will enable the reader quickly and easily to check up the conclusions drawn.

Another principle to be applied in the making of a descriptive report is that the writer should know the one who is to read the report when made. The need for such a principle is obvious. If the writer can visualize as he writes the man who will read his report, he will be able to adjust the manner of treatment and the material more effectively. One does not do his best writing for a general or unknown reader. A successful merchant has often told his experience in appealing to his customers by visualizing certain groups of individuals. For example, he once had a number of remnants for sale. He decided to put these on a bargain counter and appeal to a special group of individuals in his market who would be interested in this sale. This group of individuals was represented in his mind by the name, "Aunt Sally," whom he characterized as a middle-aged spinster lady with prim ways and neat dress and careful buying habits. He thought it was this type of individual who would be interested in the sale he was putting on. As he wrote the copy for advertising this sale, he had this type of individual in mind. As a result there appeared on the following day individuals who fulfilled almost exactly the description which had been given. At the close of that day every remnant had been sold. This merchant attributed a large part of his success in merchandising to this method of visualizing the individuals for whom he wrote. There is in this experience the general principle which has been stated above. He knew the reader of his copy. The writer of a report should likewise be able to visualize the reader of his report.

A further principle to be kept in mind is that the writer of a report should have a sufficiently broad and flexible vocabulary to express his meaning with clearness and force. Many investigations into business subjects lead into a discussion of technical details. Every business has its own language. To write intelligently and effectively about a business one should know the language of that business. Sometimes words in general use are given a special meaning in certain lines of business. The writer must, of course, be fully aware of all such special meanings. No one would attempt to write on a subject in chemistry without first becoming familiar with chemical terminology. The same thing holds true of many lines of engineering work. Brokers on the grain exchange have a language all their own. The language of the trade is in many cases the most forceful language which can be used. The writer of a report must feel at home in this language.

Most reports on business subjects cannot be said to have an element of style because so little attention is given to the manner of expression. Nevertheless, such reports should be characterized by two qualities which are generally indispensable. These qualities are clearness and effectiveness. The reader of a report is a very busy man. He has no time to figure out obscure meanings or to read many pages. The descriptive material, therefore, should be highly condensed at the same time that it is made crystal clear. The writer should give consideration to these two elements of expression. There should never be obscure passages in a report and no report should ever be padded with useless words. Much time and misunderstanding might be avoided by greater care in this regard.

Another characteristic of a written report should be

that all general statements are carefully defended by an array of facts. As an example of an effective way to present a general statement, and to back it up by convincing facts, the following two paragraphs are quoted from a report made by the president of a large corporation:

“The Bell system’s charge for service is not exorbitant. The average revenue per station to the Bell system has been reduced 55 per cent. in the last twenty years, and is less than the average charge of any other exchange system that gives continuous and immediate service anywhere in the world and less than that of most of those that give any service. Seventy-five per cent. of the subscribers to the Bell system get their service for less than the average charge. The service of the Bell system is within reach of the small user; the large user pays for his service according to his use.

“The Bell system cost of construction is not extravagant. The average cost per station is less than that of other systems of a similar nature in this country or elsewhere. The cost per station, including all toll lines but not long-distance lines, is \$135. The average annual gross revenue per exchange station, including all toll service, is \$39.62; the operating expenses, including taxes and depreciation, are \$30.75; leaving the net revenue \$8.87 on an investment of \$135. Out of each dollar of revenue 48.3 cents are paid to labor; 20.3 cents for expenses and supplies; 5.6 cents for taxes; 19.8 for dividend and interest; leaving for surplus against the future 6.0 cents.”

Every one engaged in commercial research whose duty it is to write a descriptive report should never fail to give careful references to the sources of his material. If the business man would learn a lesson from the lawyer, who is constantly inquiring the authority for every statement, he would be far more cautious about accepting unreliable information. Furthermore, if it ever becomes necessary

to check up the assertions made in a report, the references to sources will make this possible with least effort and least waste of time.

The written report gains in effectiveness by being carefully organized. It is useful to form the habit of making a careful outline of the points to be discussed before a report is written up. Such a method of analysis will avoid repetition and is likely to insure a logical discussion. Above all, the making of an outline will compel the writer to see his subject through to the end before he begins the discussion. Some critic of Patrick Henry, one of America's most famous after-dinner speakers, said of him that he started in on a sentence and trusted the Lord to help him out. From the results it would seem that sometimes the Lord failed him. No writer of a report can afford to be so careless in the construction of his sentences or his paragraphs.

It would be a very great help in the construction of a written report if headings were used to guide the reader from point to point. These headings will serve the same purpose as guideposts along an unknown way. They prepare the reader for what is to come and enable him to judge that material more intelligently. These headings also have a reaction upon the writer and tend to hold him to a unified discussion of the point at issue.

In general, it may be said that a written report should be careful and comprehensive. It is of no avail to use great care in the selection and analysis of data unless the same element is carried over into the description of that material. There is no place here for loose or evasive expressions. Every word should count. It is also necessary to see that the report covers all the points under discussion. A report of the kind discussed here is, after all,

intended to be an aid in establishing a business policy and in forming a judgment. In order that the policy may be sound and the judgment wise, it is necessary to know all the pertinent facts. It is, therefore, essential that a written report should be comprehensive in character.

As an example of the method which is recommended in the making of a descriptive report the following section is quoted. It will be noticed that this section has a special title and that it is numbered in a regular sequence. The material for it has evidently been drawn from individual plant reports. There is evidence here that all of the material has been very carefully considered and that the generalizations may be easily checked up intelligently from these individual reports. There is evidence here also of carefulness and comprehensiveness in the treatment of material:

“ VII. Foremanship.

“ In all plants the foremen have been selected on the basis of experience. The greater part of them have come up from the ranks. At new plants it has been necessary to draw foremen in from the outside, but in these cases they have come from other plants. To help the foremen to meet their problems it is the custom in many plants to hold weekly meetings. Good examples of this system may be found at Ecorse, Duluth, Toledo, and Ashtabula.

“ There are no well-defined methods of discipline in these yards. Cleveland has employed the threat of discharge and in case of temperamental difficulty between foremen and men, shifts from one gang to another. The Superior plant has given to its foremen the right to hire and fire. The Mac-Dougall-Duluth Company uses the forfeiture of the bonus for misbehavior.

“ To increase the good will among the workmen many plants hold regular meetings where talks are given by various members of the staff. Welfare work also is being done in many

yards. The American Shipbuilding Company has recently established such a department. Ecorse has a very active department of this kind. Notable work is being done at the MacDougall-Duluth Company plant. A recreation hall has been built, safety first is being preached, schools are planned, and moving pictures are to be used.

"In general, there appeared to be a competent set of foremen in charge of these plants. Many of them seemed to appreciate the great need of producing ships quickly. The relationship between them and their men was evidently on a good and friendly basis."

Useful Devices. In addition to words as a vehicle for carrying information on business topics, there are numerous other aids which have proven their worth. More ingenuity and cleverness has been shown in the use of devices by advertising men than by any other single group. As a usual thing, the purpose in view has been to arouse interest and to secure action in accordance with the desires of those who have goods to sell. Many excellent means have been used by scientists in various lines of investigations. Those interested in physical research, or chemical research, or biological studies, have made use of many kinds of devices in order to show abstract relationships. Those who are interested in engineering subjects have also been trained in the use of formulas to represent general conditions. Up to this time the general business man has felt that he does not have the training or capacity to make use of these means. The purpose here is to suggest various devices which may be used without any considerable amount of previous training or experience. Any list can have no claim to being exhaustive because the only limit is the imagination and capacity of the individual. It may be that each problem or investigation will need to discover the means best adapted for its purposes. The

classification of the means that have been used, however, should have at least a suggestive value.

Geometric Figures. The science of geometry has been called upon very largely for devices that may be used in the presentation of business facts. The most common figures are lines and curves. Such devices are generally known as graphs or charts. They consist of a line or a curve which moves in accordance with variations in value or quantity. By means of such a device one can show the relationship between two variables. In order to construct charts and graphs of this kind there is need of a background which has been laid off in blocks made by intersecting lines. There are many kinds of chart paper that may be readily secured at the store. On paper of this sort the method of constructing a graph is extremely simple. One line, the horizontal, is the base line, and generally should represent a series of equal units. Another line rises perpendicularly from it and is also divided into equal parts or segments, each of which is to have a designated value. In a chart of this kind the element of time is in the majority of cases one of the variables compared. The general rule is to make the base line represent units of time. The vertical line will, in this case, represent variation in quantity or value. Usually this scale should begin at zero. All that remains to be done now is to determine the unit of time and of quantity or value to be represented by each unit of space. This is a matter merely of judgment and inspection. The base line should be divided into sections that will correspond to the desired number of units of time. These may be seconds, minutes, hours, days, weeks, months, years, etc. In determining the value of each division of the vertical line it is wise to base the judgment upon the greatest quantity or highest value to

be considered. This will prevent the line from running above the margin of the paper.

A simple illustration of the use of this kind of graph is shown in the accompanying figure, III. This figure was

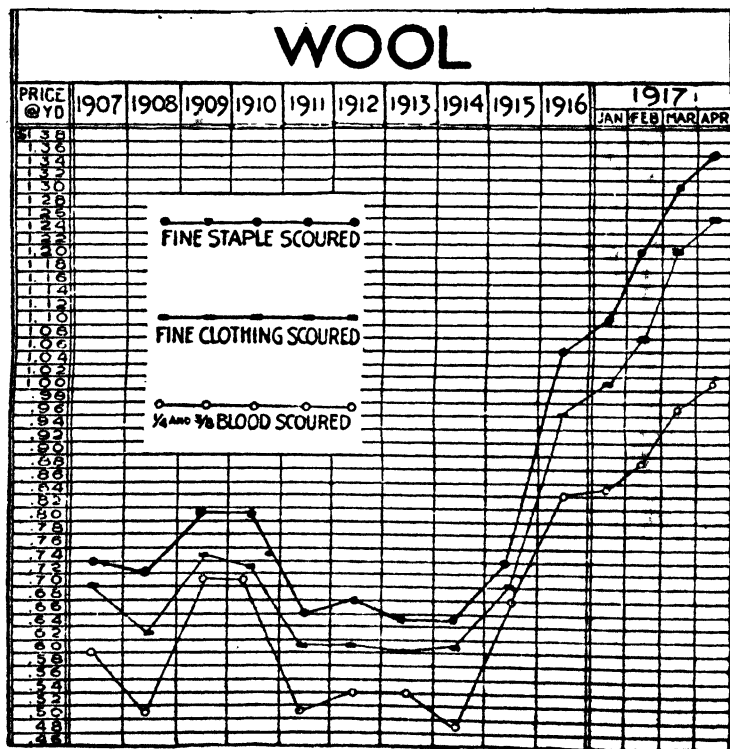


FIG. III

made by a merchant for the obvious purpose of educating his customers in the problems which he had to meet. He is a seller of woollen clothing, and the extraordinary rise in price of the raw material, wool, made necessary a corre-

sponding rise in the price of clothing. For his own enlightenment and for the education of his customers, he had constructed a number of lines which illustrated the increase in price. It is to be noted that the horizontal line represents periods of time, both days and months. The vertical line is divided into units of monetary value. Such a graph, which is easy to construct if the facts are at hand, is both a striking and a clear method of showing the variations in the price of material through a given period of time. In order to construct such a chart, it was first necessary to know the price of wool in April, 1917, in order to prevent the line from running above the top of the graph. To keep such a figure from looking lopsided or unsightly, the aim should be to make the values of the various sections such as to bring the lines well across the paper, and, if possible, at such a height from the base that their movement may be easily followed. There are some further points which should be noted in the construction of such a graph, but these will be referred to in a later section.

Another geometric figure which is frequently used is the rectangle or square. If the desire is to show the component parts of any complex data and at the same time to show the relationship of these various parts, excellent use may be made of this figure. The kind of material which readily falls into such a group is the cost of production, where the various elements of cost are to be isolated and their varying amounts to be given. An illustration of the use of this kind of device appears in Figure IV. It will be noted in this figure that there are rectangles of different sizes joined one on to the other, and identified by different marks, each one representing an element in the cost. There are figures accompanying the chart which express

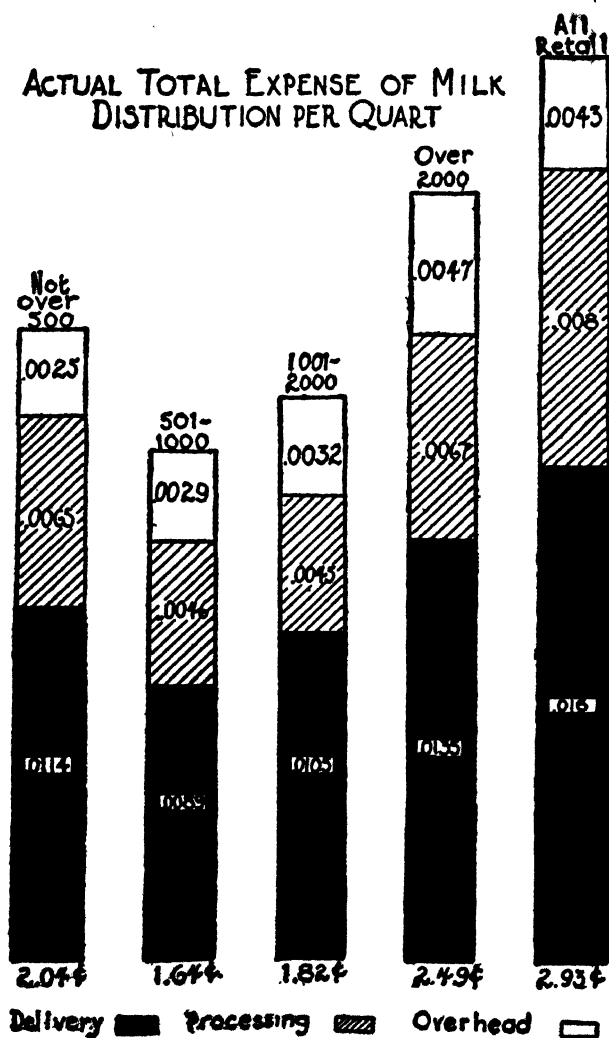


FIG. IV

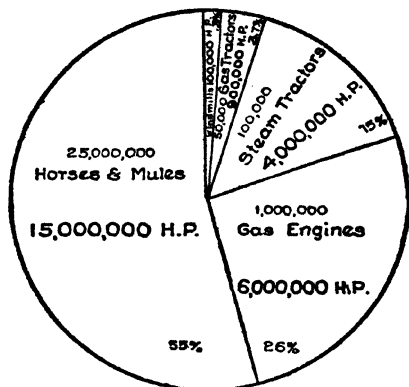
in another form the same relationship and at the same time furnish the basis upon which the calculation has been made. Many uses may be made of the geometric figure.

The circle is also frequently used to show the relationship of various data. This circle is usually divided into segments, each segment representing a per cent of the total. The construction of such a figure is a simple matter, once the segments have been correctly divided. An illustration of the use of this type of device is given in Figure V. It may be said, in general, that the circle is most useful when the material is not too complex. The illustration given may be criticized because of the difficulty there is in estimating the value of the small sectors. Where there is this confusion and difficulty the device becomes less effective. The circle, however, has many uses, and its chief merit is its familiarity.

Many other figures may be used, such as parallel bars, the cylinder, the pyramid, or the cone, and are often employed effectively. It is to be remembered that there is no limit, other than the skill and imagination of the investigator, to the kinds of figures which he may employ. A bit of advice, however, is necessary and a word of caution, also, to the effect that the figure which is to be used should be very carefully studied before it is employed. Often the character of the material will not adapt itself to the type of figure desired. Frequently, also, the purpose in view will not best be shown by the figure in mind. In general, for quantitative comparisons parallel bars or rectangles are best suited, particularly if comparison by length alone is made. Other figures usually employ a comparison of areas, are difficult to construct accurately, and are likely to convey wrong impressions as to the proportions involved.

Maps. Very extensive use is made of maps in present-

POWER ON AMERICAN FARMS



Total - 26,000,000 H.P.

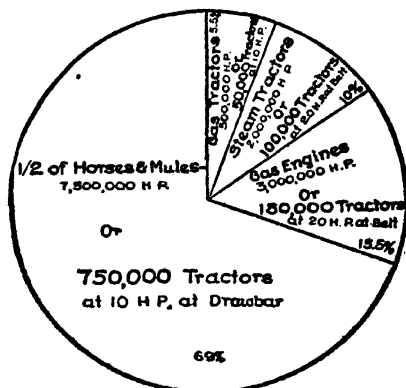
Used on Farms

Used in Manufacturing Establishments

26,000,000 H.P.

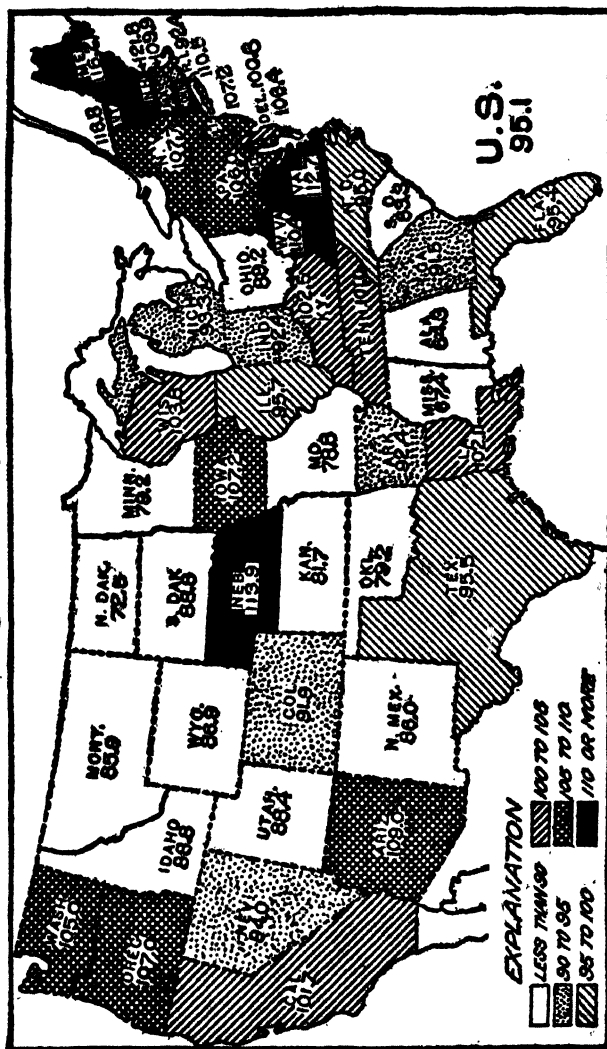
19,000,000 H.P.

TRACTOR POTENTIAL MARKET



Total - 1,050,000 Tractors

Combined Averages of Crop Yields by States.



Explanation: The average yields of the past ten years are represented by 100. The figures given in the map are percentages of that number. Thus the figure 107.2 in Iowa means that the 1916 yields in that state as a whole are 7.2 per cent larger than the ten-year average. The figure for the entire country is 95.1, which indicates a reduction of 4.9 per cent from the ten-year average.

FIG. VI

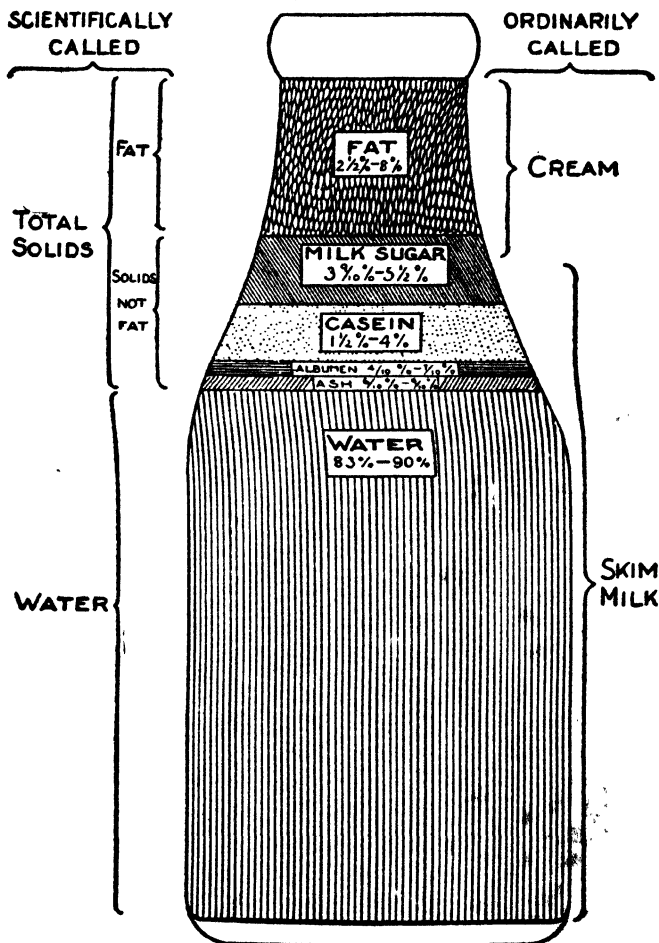
ing business data. This device is very familiar to those who use the map-and-tack system in directing traveling salesmen and in the apportioning of their territory. Wherever the market is of wide dimensions and of varied character, it may be wise to divide it on a geographical basis. In this case a map may be the most useful means of making this market comprehensive at a glance. The use of a map is in reality obtaining a bird's-eye view of a widely extended problem. It is often found possible, also, to aid in visualizing a concentrated problem by spreading it out upon an enlarged map area. This is fairly well shown in the accompanying illustration, Figure VI.

Pictures. Another familiar means of presenting business material is through pictures, Figure VII, or photographs. Devices of this character are not of great assistance where the purpose in mind is merely clearness of presentation, except in case of careful photographs made of machines or processes. Technical reports often find it necessary to use this means in order to make the details of the report clear. In studies of this kind the camera and especially moving pictures are coming into wider and more practical use every day. Where the aim is to appeal to a prospective buyer and the hope is to gain his instant attention, photographs and pictures are often used which are humorous in character and frequently are merely cartoons. In cases like this no general rules can be given because the purpose in view will every time determine the character of illustration and the type of picture.

Models. The inventor has long since introduced the use of models as a means of demonstration. A more extended use of this type might very well be made. Where the material is new and unknown and is of a technical or complex nature, it is, of course, more easily understood if it is

VARIATIONS IN THE CONTENTS OF MILK DRAWN FROM THE COW

Compiled from data on several hundred tests made by Hermann C. Lythgoe, Analyst of the Massachusetts State Department of Health.



KNOW WHAT IS IN YOUR MILK AND CREAM

Grading and Labeling tells the story—Demand it.

FIG. VII

shown in miniature as it actually is, or is to be, on a large scale. Lawyers have found that the best kind of evidence is "real" evidence, which means the bringing in to court of the very instruments used in committing the deed, or the defective switch which caused the disastrous wreck. Business men may well profit by the experience of others in this regard.

Organization Chart. Sometimes various devices are combined with good effect. One of the most useful means of presenting material that is at all adaptable to this method of presentation is the organization chart. It is possible through this device, by the use of squares, rectangles, or circles, connected by lines to concentrate in one simple diagram many different factors. Investigators who have been interested in the study of scientific management have made the organization chart familiar to manufacturers. A very useful exercise for the merchant or manufacturer is the construction of a chart that will show the distributive organization of his own commodity. It may be that he has never taken a broad view of the distributive system which he is using, or of the various relationships of risk and responsibility of the middlemen who stand between the maker and user.

Charts of this kind may be carried into details as far as the purpose justifies. An illustration is given in Figure VIII of an organization chart which shows the lines of control centering in the advertising manager. Such a chart is of educational value not only to the manager himself but to every subordinate throughout the establishment. The humblest worker may be made to realize by a chart of this kind that he is an important part of the whole organization.

The business manager himself may get a new view of the

How Sunkist Advertising Is Subdivided

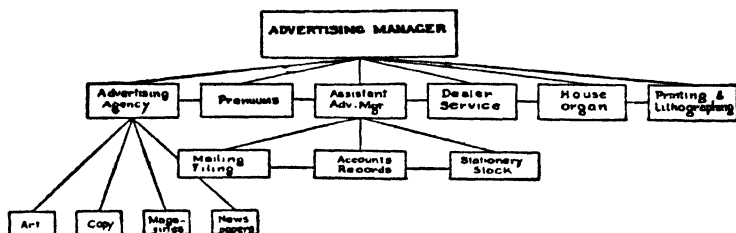
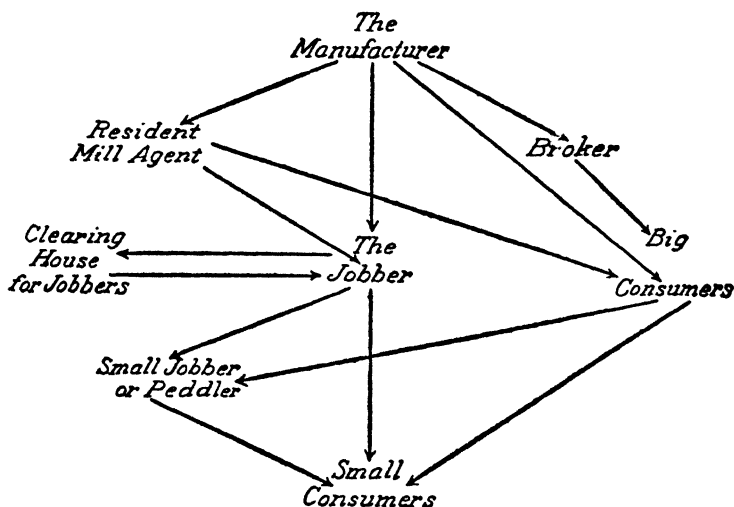


FIG. VIII

business organization of which he is a part by constructing a chart of the distributive organization which carries his goods from producer to consumer. A simple illustration of such a chart is given in the accompanying figure, IX.



—Levin

*The Wrapping Paper
Distributive Organization*

FIG. IX

It is possible by this means to make a careful study of the lines of control and of risk as the goods pass on their way toward consumption. One may know more clearly what his own relationships are with the various middlemen whom he meets and with his competitors. Some such chart should be before the business manager every day, in order that the entire organization may be a part of his plans and of his judgment.

Tables. One of the most familiar methods of presenting data is by means of tables. There are various methods of tabulation, most of which are so simple that one needs no previous training to use them. There are, however, some phases which should be carefully considered. A fundamental principle in the construction of a table is that "each table should be a unit." This advice means simply that there should be unity of purpose behind the table which is being made. It is not enough, however, to have mere unity of purpose. Even though this is secured, it may not be possible for all the material to be presented in a single table. One of the first questions to ask is, Can the facts be shown in one table? The rule which should guide in answering this question is that no table should be so large or so complex as to be confusing. If a table is hard to follow, it loses much in clearness and effectiveness. On the other hand, it may be said that if the material can be put in a single table, it is then all brought together so that it is not difficult to make the desired comparisons. It must finally be left to the individual judgment to determine whether one or more tables should be used to carry the material.

A table may show either figures or percentages or both. Here, again, the nature of the investigation would very largely determine what the character of the material

should be. It is wise advice, however, to say that if percentages appear in the table, the figures should be near at hand for checking them up. A good general rule is that every kind of chart should have at hand the means of correcting or checking any part of it or the final results. It is clear that a table which carries both the figures and the percentages will be able to show much more than a table carrying only one or the other.

In the construction of a table there are several points to keep in mind. One of the first questions asked is, What form shall a table take? Again the answer would have to be indirect. It will depend very largely upon the kind of material and the purpose in view. Obviously, however, if a table is to show comparisons, which is usually the case, the facts which are to be compared should be brought as close together as possible. If the data are in columns then the columns should be near enough to each other so that a ready comparison can be made. If the totals or the averages or the percentages are the important thing, then these should be in such position as to make comparison easy.

It is clear that a table can be constructed only after a large part of the analysis has been made. In fact, the making of a table is a part of the analysis. In connection with this analysis there arises a question of the number of columns to be used, the headings to be given to each, and the title which the table itself is to carry. Common sense will dictate in most cases the best usage. Some simple principles, however, may be stated for the purpose of guidance. If it is desired to carry the analysis of data into minor details, then the number of columns will increase and the number of headings likewise. Of course the more minute the details of analysis, the more nearly should one

approach absolute accuracy. The word of warning which should be given is that confusion must be avoided. In a case of this kind there will be need of main headings and subheadings, each of which should express compactly and clearly the principle illustrated by the facts. In general, the title of the table and the headings of the columns should in every case contain the unit which has been used in analysis, and should be complete and self-explanatory. It is desirable, also, in constructing a table to omit as many digits as possible and still maintain reasonable accuracy. If carried too far the figures will become cumbersome and confusing.

A table is just as accurate as the degree to which the one who constructs it is careful and accurate. Whether the table is to be presented to the manager of the business, or whether it is to be used for purposes of persuasion and appeal, a high standard of accuracy must be maintained. This standard holds not only for the title and the headings but also for the mathematical calculations. While small mistakes might make no real difference in the results, their effects are extremely bad. A single error in a table may destroy the general effect of the whole by arousing a suspicion. In order to eliminate as far as possible all errors in addition or multiplication or division, it may be necessary to check up the items. In these days of calculating machines they should be used freely in such a process. An example of a table which is clear and effective is given here. A careful study of this table will well repay the time and effort spent.

BELL TELEPHONE SYSTEM IN THE UNITED STATES
CONDENSED STATISTICS

	Dec. 31, 1895.	Dec. 31, 1900.	Dec. 31, 1905.	Dec. 31, 1910.	Dec. 31, 1915.	Dec. 31, 1916.	Increase.
Total Miles of Pole Lines	78,203	131,538	213,233	282,877	330,602	337,289	6,687
Miles of Underground Conduit (length of single duct)				30,165	44,510	47,120	2,610
Miles of Underground Wire	184,515	705,269	2,345,742	5,992,303	10,536,837	11,468,525	931,688
Miles of Submarine Wire	2,028	4,203	9,373	24,636	36,314	41,172	4,859
Miles of Aerial Wire	488,872	1,252,859	3,424,803	5,625,273	7,932,394	8,340,618	408,224
Total Miles of Wire	675,415	1,961,801	5,779,918	11,642,212	18,505,545	19,850,315	1,344,770
Comprising Toll Wire	215,687	607,599	1,265,236	1,963,994	2,453,483	2,682,910	229,427
Comprising Exchange Wire	459,728	1,354,202	4,514,682	9,678,218	16,052,062	17,167,405	1,115,343
Total	675,415	1,961,801	5,779,918	11,642,212	18,505,545	19,850,315	1,344,770
Miles of Phantom Circuit				115,506	196,841	221,994	25,153
Total Exchange Circuits	237,837	508,262	1,135,449	2,082,960	3,174,271	3,459,069	284,798
Number of Central Offices	1,613	2,775	4,532	4,933	5,300	5,397	97
Number of Bell Stations (Owned) 1....	309,502	835,911	2,282,378	3,933,056	5,968,110	6,545,490	577,380
Number of Bell Connected Stations...		20,000	246,337	1,949,663	3,183,111	3,301,702	118,591
Total Stations	309,502	855,911	2,528,715	5,882,719	9,151,221	9,847,192	695,971
Number of Employees	14,517	37,067	89,661	120,311	156,294	179,032	22,738
Number of Connecting Companies, Lines and Systems				17,845	28,306	30,358	2,052
Exchange Connections Daily	2,351,420	5,668,946	13,543,468	21,681,471	25,183,799	28,580,073	3,946,274
Toll Connections Daily	51,123	148,528	368,083	602,539	819,030	849,860	70,830

1 Includes Private Line Stations.

Rules and Cautions. It is possible to state only a few general rules to guide in the use of charts and graphs for the purpose of presenting business data. In the discussion which has just preceded the various types of devices have been described and the method of their construction has been explained. It now remains to add a few principles as to their use. The particular aim is to caution against a misrepresentation of facts by the employment of such means.

Charts and graphs may be discussed together in this connection. In general, they are best adapted to the following uses:

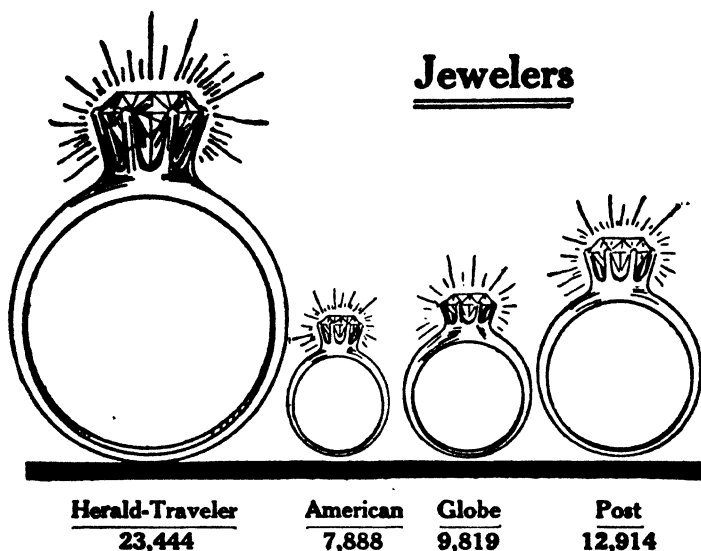
1. To show component parts. This means that the material is of a complex character, and it is desired to show the relationship of these different parts. One excellent way to accomplish this purpose is to use bars of varying length which may themselves be divided into sections, each representing a definite element in the material. As has been suggested above, costs may be represented clearly in this way. The various elements that enter into the total cost can be indicated and their relationship also revealed by the varying lengths of the bars. It is likewise possible to show component parts by means of circles, which are divided into sectors, each sector representing one of the elements in the complex data. Squares and rectangles may also be used for a similar purpose. These figures may be subdivided in many different ways, to show many different kinds of facts.

2. To show comparisons. The chief aim of all statistical work is to show comparative values. The devices that are readily adapted to this use are parallel bars, various sizes of circles, pictured objects drawn on different scales, squares and rectangles, also of varying sizes, etc.

These are familiar methods of showing comparisons, but may often be misrepresentative unless care is used in the construction of the charts and diagrams. It must be remembered, for instance, that if the areas of squares and rectangles are to represent different values, the difference in value should correspond to the difference in area. The area of a square or rectangle is equal to the base length multiplied by the height. It may be noted in passing that a rectangle can be used to express three different quantities; one side may represent price and another side may represent quantity, while the entire area represents the value. The value is, of course, equal to the quantity multiplied by the price. The same caution is needed in the use of spheres, circles, and cubes. The relative sizes of these figures are not the same as the relative lengths of straight lines. The areas of circles or cubes or spheres, must be calculated carefully or else the relationship is not accurate.

Effective use has frequently been made of pictured objects or symbols drawn on different scales to represent varying quantities or values. These offer even greater difficulties of accurate construction than those mentioned above. They are justified only on the basis of their vividness. A considerable degree of artistic skill is also generally required to make them attractive. An example of this type is given. Figure X.

3. To show interdependent relationship. A combination of several geometric figures may be used to show lines of authority or elements in organization, or any kind of interrelated elements. A familiar use of devices for this purpose is shown by organization charts which have been discussed in detail before. The value of this method for tracing the processing of material through a plant or



A superb index as to generous buying power, for the guidance of general advertisers, is the selection of newspapers by local merchants selling high-class merchandise. Expensive jewelry is a good example.

During 1917 high-class Boston jewelers used Boston newspapers as below:

	<u>Herald-Traveler</u>	<u>Post</u>	<u>Globe</u>	<u>American</u>
Bigelow Kennard Co.....	1,315	1,360	834	550
Hodgson, Kennard Co.....	1,039			
Frank N. Nathan.....	3,167	1,965	708	596
Carl H. Skinner.....	690			
A. Stowell.....	4,029	2,307	2,148	2,160
Smith Patterson Co.....	13,204	7,282	6,129	4,582
Totals	<u>23,444</u>	<u>12,914</u>	<u>9,819</u>	<u>7,888</u>

FIG. X

store, to show the line or staff organization within the business, to show the related functions in any business activity, or any other series of relationships, is readily seen.

4. To reveal the relation of variables. Business activity is constantly shifting and changing. It is never static; it never remains the same from period to period. There is frequent need, therefore, of some means to trace the constantly shifting relationships that exist in any business process. The simplest and most useful means to gain this end is the use of curves. In variables of this character it is generally easy to find that one is an independent variable, and the other is a dependent variable. For example, the element of time may frequently be found to be the independent variable, while the amount of goods sold will depend directly upon the time. In order to show this relationship the best method, probably, is to chart it in the form of a curve where the base line represents the time and the vertical line represents the quantity of goods sold. It may be said in general that when lines or curves are used the rule is to make the base line represent the independent variable and the vertical the dependent variable. Otherwise it is not possible to read the chart readily or to discover relationship at any given period of time.

A caution is needed, also, in the construction of such curves to the effect that careful judgment should be used in selecting the units both on the base line and on the vertical line. It is easily possible to overemphasize changes by selecting a unit which causes violent fluctuations in the curve or line that is being plotted. For example, if the time units on the base line are given too much space value, the result will be to flatten out the line which is being drawn so as to minimize the changes. On

the contrary, if the space value is too small or if the units of quantity are too large, the changes in the line may be too great to represent the facts accurately. A little care in this matter will enable one to adjust the units of time and quantity to represent fairly the material that is being presented. When carefully used, the chart of this kind is of immense value. "A curve permits of finer interpretation than any other known method of presenting figures for analysis." (Brinton, "Graphic Methods of Presenting Facts," p. 73.)

The use of figures of this kind should be connected with the previous discussion of statistical averages. By means of a curve or a line it is usually easy to locate the mode. This, it will be remembered, is the most useful statistical average for the business man. The highest point attained by a plotted curve will identify the mode. As a matter of fact, where this mode is not readily obtained by an inspection of the figures, it may be wise to put the material in the form of a curve in order that the mode may thus be located. If it is desired to compare the modes of various groups of material, this may be readily done by running the curves on the same chart and thus locating the mode for each group. "When it comes to considering two or three columns of figures simultaneously to see whether there is similarity in the fluctuations shown by the various sets of figures, the number of men who can intelligently grasp the facts presented are rather few. It is in just such problems as these, where a number of sets of data must be compared, that curves have tremendous advantage over presentations by columns of figures." (Brinton, "Graphic Methods," p. 107.)

This survey of methods of presenting business facts has been made to suggest the kinds of devices which may be

used by any business man. The discussion has not aimed at completeness but at suggestiveness. It is felt that a far greater use might be made of easily constructed figures which will enable the business manager to grasp more clearly and more readily the complex elements in the problem before him. There is no claim that devices of this sort will solve business problems. Their purpose, rather, is to identify the problems. As a general rule, when a difficulty has been fully understood, it has been at least half overcome. Herein lies the value of well-used methods of presentation.

It is suggested, also, that any one interested in graphic presentation of business data should begin a study of the various methods that are used by others. The best sources for information of this kind are the government reports. These are almost always easily accessible. The Statistical Atlas of the U. S. Bureau of the Census, in particular, will prove exceedingly interesting and suggestive in the matter of devices which may be used to present many different kinds of material for many different purposes. There is also a very excellent discussion of the graphic method to be found in Brinton's "Graphic Methods for Presenting Facts." This book is filled with illustrations and shows both good and bad examples of the use of charts and graphs. It will prove very suggestive to any one engaged in commercial research. The following rules have been selected from it. They will aid in determining the kind of graphs to use and in criticizing the methods of construction.

"CHECKING LIST FOR GRAPHIC PRESENTATIONS

Are the data of the chart correct?

Has the best method been used for showing the data?

Are the proportions of the chart the best possible to show the data?

Are all scales in place?

Have the scales been selected and placed in the best possible manner?

Are the points accurately plotted?

Are the numerical figures for the data shown as a portion of the chart?

Have the figures for the data been copied correctly?

Can the figures for the data be added and the total shown?

Are all dates accurately shown?

Is the zero of the vertical scale shown on the chart?

Are all zero lines and the 100 per cent. lines made broad enough?

Is all the lettering placed on the chart in the proper directions for reading?

Is a key or legend necessary?

Does the key or legend correspond with the drawing?

Is there a complete title, clear and concise?" (Ref. Brinton, "Graphic Methods," p. 360.)

" RULES FOR GRAPHIC PRESENTATION

1. Avoid using areas or volumes when representing quantities. Presentations read from only one dimension are the least likely to be misinterpreted.
2. The general arrangement of a chart should proceed from left to right.
3. Figures for the horizontal scale should always be placed at the bottom of a chart. If needed, a scale may be placed at the top also.
4. Figures for the vertical scale should always be placed at the left of a chart. If needed, a scale may be placed at the right also.
5. Whenever possible, include in the chart the numerical data from which the chart was made.
6. If numerical data cannot be included in the chart, it is well to show the numerical data in tabular form accompanying the chart.
7. All lettering and all figures on a chart should be placed so

as to be read from the base or from the right-hand edge of the chart.

8. A column of figures relating to dates should be arranged with the earliest date at the top.
9. Separate columns of figures, with each column relating to a different date, should be arranged to show the column for the earliest date at the left.
10. When charts are colored, the color green should be used to indicate features which are desirable or which are commended, and red for features which are undesirable or criticized adversely.
11. For most charts, and for all curves, the independent variable should be shown in the horizontal direction.
12. As a general rule, the horizontal scale for curves should read from left to right, and the vertical scale from bottom to top.
13. For curves drawn on arithmetically ruled paper, the vertical scale, whenever possible, should be so selected that the zero line will show on the chart.
14. The zero line of the vertical scale for a curve should be a much broader line than the average coördinate lines.
15. If the zero line of the vertical scale cannot be shown at the bottom of a curved chart, the bottom line should be a slightly wavy line, indicating that the field has been broken off and does not reach to zero.
16. When curves are drawn on logarithmically ruled paper, the bottom line and the top line of the chart should each be at some power of ten on the vertical scale.
17. When the scale of a curved chart refers to percentages, the line at 100 per cent. should be a broad line of the same width as a zero line.
18. If the horizontal scale for a curve begins at zero, the vertical line at zero (usually the left-hand edge of the field) should be a broad line.
19. When the horizontal scale expresses time, the lines at the left- and right-hand edges of a curved chart should not be made heavy, since a chart cannot be made to include the beginning or the end of time.
20. When curves are to be printed, do not show any more coördinate lines than necessary for the data and to guide

the eye. Lines one quarter of an inch apart are sufficient guide to the eye.

21. Make curves with much broader lines than the coördinate ruling so that the curves may be clearly distinguished in the background.
22. Whenever possible have a vertical line of the coördinate ruling for each point plotted on a curve, so that the vertical lines may show the frequency of the data observations.
23. If there are not too many curves drawn in one field it is desirable to show at the top of the chart the figures representing the value of each point plotted in a curve.
24. When figures are given at the top of a chart for each point in a curve, have the figures added, if possible, to show yearly totals or other totals which may be useful in reading.
25. Make the title of a chart so complete and so clear that misinterpretation will be impossible." (Brinton, "Graphic Methods," p. 361.)

A movement is on foot among those who are especially interested in the making of graphs and charts to secure some standardized methods. A tentative report has already been made by a Joint Committee on Standards for Graphic Presentation. These, also, will fully repay careful study.

"The committee is making a study of the methods used in different fields of endeavor for presenting statistical and quantitative data in graphic form. If simple and convenient standards can be found and made generally known, there will be found a more universal use of graphic methods with a consequent gain to mankind because of the greater speed and accuracy with which complex information may be imparted and interpreted. The following are suggestions which the committee has thus far considered as representing the more generally applicable principles of elementary graphic presentation.

1. The general arrangement should proceed from left to right.
2. Where possible represent quantities by linear magnitude, as areas or volumes are more likely to be misinterpreted.

3. For a curve the vertical scale, whenever practicable, should be so selected that the zero line will appear on the diagram.
4. If the line of the vertical scale will not normally appear on the curve diagram, the zero line should be shown by the use of a horizontal break in the diagram.
5. The zero lines of the scale for a curve should be sharply distinguished from the other coördinate lines.
6. For curves having a scale representing percentages, it is usually desirable to emphasize in some distinguishing way the 100-per cent. line or other line used as a basis of comparison.
7. When the scale of a diagram refers to dates, and the period represented is not a complete unit, it is better not to emphasize the first and last ordinates, since such a diagram does not represent the beginning or end of time.
8. When curves are drawn on logarithmic coördinates, the limited lines of the diagram should each be at some power of ten on the logarithmic scales.
9. It is advisable not to show any more coördinate lines than necessary to guide the eye in reading the diagram.
10. The curve lines of a diagram should be sharply distinguished from the ruling.
11. In curves representing a series of observations, it is advisable, whenever possible, to indicate clearly on the diagram all the points representing the separate observation.
12. The horizontal scale for curves should usually lead from left to right and the vertical scale from bottom to top.
13. Figures for the scale of a diagram should be placed at the left and at the bottom or along the respective axes.
14. It is often desirable to include in the diagram the numerical data or formulas represented.
15. If numerical data are not included in the diagram it is desirable to give the data in tabulated form accompanying the diagram.
16. All lettering and all figures on a diagram should be placed so as to be easily read from the base as the bottom, or from the right-hand edge of the diagram as the bottom.
17. The title of a diagram should be made as clear and com-

plete as possible. Sub-titles or descriptions should be added if necessary to insure clearness."

Conclusion. This general survey of graphs, diagrams, tables, and maps is not intended to be all inclusive, but rather to be suggestive in character. In using these devices for the presentation of business facts, it should be remembered that they are merely vehicles of expression. They are just as good as their use, and no better. If they are not fitted for the purpose in view or if they are faulty in design or construction, if they overemphasize certain unimportant facts, then they fall in value. In every case these devices should be used with great caution. Checks of many kinds are needed to keep them in line. Their primary purpose is to condense, to concentrate, to summarize business data, and to make otherwise lifeless and unintelligent figures vivid and clear. They are, however, only a means, not an end; merely one further step in the process of research. He who uses these devices must remember that no methods in business research dare to be false or dishonest. Carefulness and accuracy can make such methods as are discussed here scientific in construction.

CHAPTER IX

INTERPRETATION OF BUSINESS FACTS

Essentials of interpretation — Mechanical and mathematical tests — Tested by new angles — Test of adequacy of data — The test of immediate serviceability — Test of too much data — Indefinite data — History and prophecy in data — Business facts and business policies — Statistics as a method — Superiority of tables — Conclusion.

The final step in the process of research is interpretation of data. This assumes the careful collection and analysis and presentation of the facts. It assumes, too, that all the essential factors have been identified and given their proper value in so far as it has been possible. It is probably also the most important step in the entire process in that it makes usable all the efforts that have preceded. Doubtless, too, it is the most difficult step to take. More depends upon it in the matter of judgment than on any other one activity in research work. It is the keystone to the arch. It means the translating of many facts of varied character and value into a plan of action, into a business policy.

The importance of interpretation makes necessary even greater caution than in the previous steps in the process. Much depends upon the judgment of the individual. Mere facts can no longer help. They have done their work. The interpretation, therefore, becomes a great test of the capacity of the business manager. "Care, judgment, insight, and caution are eternally necessary to guard against mistaken views, the assignment of cause for effect, the omission of qualifying or significant facts, the

formation of false judgment, etc." (Secrist, "Introduction to Statistical Methods," p. 235.)

Essentials of Interpretation. The facts that come before the business manager are of many different kinds. They have, however, been reduced to some common basis in their classification and analysis. In most cases, also, they have been assembled for a definite purpose. The first task that remains is to inspect them with great care. No man is to be deceived either by an underestimate or by an overestimate. The goal of research is the truth. How, then, may facts of this kind be inspected intelligently?

In the first place, the source and purpose of business data must be ascertained. If they are from one's own business and if they are to form the basis of one's own policy and practice, then the control of their preparation and analysis and presentation is possible. The ideal in a case of this kind is to present the business as it is, and the question to ask is: "What do these facts show?" The facts that appear before the business manager may have come from outside. Indeed, they may appear for a wholly different purpose than the internal data. The whole process of their collection, analysis, and presentation may be aimed primarily at effects of impression, rather than clarity and precision of expression. Such is the case with many business facts used for advertising purposes. It is clear that data of this kind must be judged in a different attitude from internal data. Many new questions arise concerning them. Are they convincing? What are the checks upon such data? What is the purpose in the mind of those who have prepared these facts and what methods have they used? A few tests for data, both internal and external, are here suggested.

1. On the basis of an inspection being made for a definite

purpose, the first query that should arise is: "Are these facts pertinent and essential for the aim in view?" There are the facts of sales. Do these touch upon the main issue before the mind of the manager? This is a part of the analysis, to be sure, and in many cases may be assumed to have been carried out acceptably. But if the facts are presented from the outside, the test of their being pertinent and essential is necessary.

2. Another test question for the inspection of business data is: "Are these facts sufficiently comprehensive?" The task is difficult enough to secure a sufficient basis in fact, at best, for a valid business judgment. No one should, therefore, be willing to accept a meager supply of facts when a more abundant quantity is at hand, nor can one be sure that all of the essential and pertinent facts are before him unless the survey has been sufficiently comprehensive. Most business problems have many ramifications. There should be, therefore, a constant pressure for as broad a survey as can be made.

3. A further test in the inspection of data that have been presented is the question: "Are these facts sufficiently specific and reliable to form the basis of a sound judgment?" There is a constant temptation in business investigation to make vague and general statements that are frequently of no value for a guide in the management of a business. These facts may be made up of a mere opinion or a mere guess, although they do appear in the guise of definite figures. It is a wise policy to examine carefully to see that the facts are in reality specific as applied to the problem in mind, and then to inquire carefully into their reliability. This device is especially pertinent when the data have been gathered outside of the business and are secured from uncontrolled sources.

4. A further test of business facts is: "Are they homogeneous?" Data may be falsely classified, without having been reduced to a common basis or a single principle. In such a case any conclusion drawn from them is of no value. Although business facts are of countless variety, it is possible to reduce most of them to a definite principle provided they are used properly. In order to reduce these variegated facts to a single principle, it is necessary that a common unit be used in all calculations. This question has been discussed at length in the analysis of business data. It must be emphasized, however, that in the interpretation of business facts one test that must be applied is this test of a common unit. Averages are not valid, are not, in fact, real averages, unless they have been reduced to some such common denominator. In no other case are these facts comparable or usable for the establishment of a rule of action.

5. A further query to make in the inspection of business data is: "Are these facts correlated?" This is in reality the fundamental test of all tables, graphs, and charts. There must be a logical process behind the facts presented. There should be evidence of the working of the principle of cause and effect. This is probably the most important point in the interpretation of business data. Indeed, statistics fell into disrepute because this principle of cause and effect, the general principle of correlation, was not regarded. Mere incidental relationships were interpreted as consequences and results.

In order to ascertain whether this element of correlation exists in business data, it is necessary to look at what is beneath them. They must be checked and tested by some method. It must be remembered, also, that charts, graphs, and maps do not prove anything in and of them-

selves. Averages, modes, and tendencies are not in themselves activities or forces. They can only be results, consequences, effects of forces at work. "An average is not to be regarded as a secret something which determines events. There may be an average in birth and death and crime but, after all, the average is not responsible for any of them. It takes something more potent than an average to produce typhoid fever or to crack a safe." (Coffey, "The Science of Logic," Vol. II, p. 291.)

It is not by any means easy in all cases to know when material is really correlated. A general rule for testing material from this point of view has been stated as follows: "When two quantities are so related that the fluctuations in one are in sympathy with the fluctuations in the other so that an increase or decrease in one is found in connection with an increase or decrease (or inversely) in the other, and the greater the magnitude of the changes in the one, the greater the magnitude of the changes in the other, the quantities are said to be correlated." (Bowley, "Elements of Statistics," p. 316.) The correct method of presenting business facts will help greatly in determining whether this rule applies or not.

This element of correlation may take two or more different forms. One of these forms may be the principle of cause and effect. "Correlation means that between two series or groups of data there exists some causal connection," (King, "Elements of Statistical Methods," p. 197.) Facts, however, may be correlated when it is not possible to establish such a causal connection. If the sympathetic movement indicated in the definition given above is observed without exception, and a sufficiently great number of times, there arises in the mind the principle of association between the series or groups of data.

It is probable that a large part of business facts may be judged on the basis of association rather than on the basis of causal connection. The business man is accustomed to associate various changes in trade conditions. He watches, for example, the bank clearings in certain trade centers, such as Chicago or New York. As these clearings vary in amount he draws conclusions that certain changes have occurred in trade. Of course, the principle of association may be carried far beyond justifiable reasoning. It is on this basis that most of the weather predictions and rural traditions have grown up. There may be no scientific relationship between heavy snows and good crops, even though a partial connection can be established.

It is not possible to emphasize this test too strongly. To those who are not on their guard the conclusiveness of data, neatly presented, with totals and averages and percentages carefully calculated, has a strong appeal. In the case of diagrams, charts, and maps the psychological appeal is so great as frequently to overcome good judgment. "It is their appeal, their smug finality, which suggest their virtues and at the same time conceal their weakness." (Secrist, "Introduction to Statistical Methods," p. 232.) It is because of this danger, that some clever method of presentation may conceal the weakness of business facts, that a careful inspection for the principle of correlation has been insisted upon.

6. Another test to be applied to business statistics has to do with their sources. Business facts may come before the manager either at first hand or at two or more removes from their origin. The query to be kept in mind in inspecting them from this point of view is whether there is any reason to suspect an entrance of personal bias. Here, again, there will be a distinction between facts from inside

sources and facts from outside sources. This process is merely a reworking of the methods of classification and collection in order to place a check upon them. Under this heading there are the tests of authority, which will apply to reports as well as maps and charts. The opinion of an expert will naturally carry far more weight than the opinion of one without reputation. The general principle in this case is that the data can be only as good as the source from which they are derived.

7. Business data should further be tested by the aim in view. The production manager, for instance, will want a certain set of facts, probably from the sales manager, another set of facts from the purchasing agent. Each of these managers can furnish to best advantage a special kind of data. An inspection should show whether they have kept within their field and whether they have furnished an adequate amount. The advertising manager also has his particular point of view. The facts which he can give may be of the same character as those offered by the sales manager, and yet they will not be the same in purport. The business manager, whose duty is to control the entire system of management, desires the proper perspective in his survey of facts. His inquiry is as to whether the records offer an intelligent basis for judgment.

8. The business facts that come before the manager in the form of a table or chart or map, must be unmasked. It may be that considerable artistic effort has been devoted to their presentation. Many subtle, psychological influences may thus have been added to the facts themselves. The present war has contributed many words and phrases to our everyday vocabulary. One of these, and one of the most useful, is "camouflage." This term can be applied to the interpretation of business facts. Atten-

tion is frequently centered by many artful devices upon the answer rather than upon the evidence or proof.

In the old-fashioned books on arithmetic, answers to the problems were given either in the back of the book or at the end of each problem itself. Many pupils who used these books that gave the answers did not always want to work the problem through to reach the desired goal. They knew beforehand what the teacher wanted and sometimes to save mental effort they would start with the answer and work back through the problem; or they would put down the answer without having proved it. Unfortunately, some such pupils have grown up into business men. An example of this point is illustrated by this map which attempts to emphasize the central position of Chicago as a market.

It will be noted that the effect of the arrows centered in direction toward Chicago in reality overemphasizes the position of that trade center. It is also clear that these arrows, although they may represent concrete data, do not prove any definite thing. Suppose, for example, their direction was charted so that they all pointed toward St. Louis. They might even more forcibly emphasize the central position of that city. It is not intended here to call into question the data upon which the map is based, but only to point out that such a method of presenting the facts must be carefully scrutinized lest a false impression be given. If the arrows in the map were drawn in a directly opposite direction, the effect would be far different from what is given here. This kind of interpretation may be called unmasking the facts in the method of presentation.

9. Another test to be applied to business data is that of comparison. All statistical methods have for their ulti-

Chicago Is the Heart of Things in America

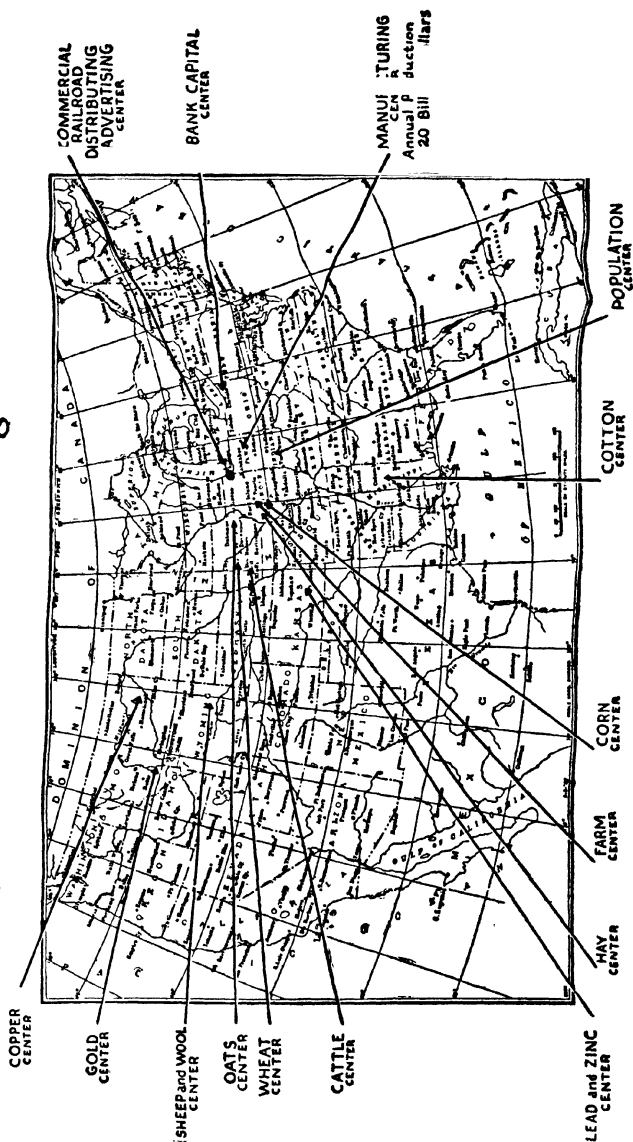


FIG. XI

mate aim some kind of comparison. The use of units, averages, and all other statistical devices is to reduce dissimilar facts to such a basis that they can be compared. "Comparison is, in general, the final goal toward which all statistical studies tend." (King, "Elements of Statistical Methods," p. 186.)

On this basis the business facts should be checked up in a number of ways. It is wise, for instance, that experience be used as the background for judging business facts. The business man who is interested in research work should also test the facts by his own observation. It is likely that he will do so in any case, because one's judgment is very largely based upon experience and observation. Furthermore, it is necessary always to keep one's judgment alert. While the danger may be that the business manager will tend to become too conservative, a word of caution is nevertheless necessary to put him on his guard. One must, of course, constantly be open-minded, and yet one should never be swept off his feet.

One comparative test is by means of past records. Suppose the immediate problem is one of determining how much working capital is needed in a given business. The facts bearing upon this question that are presented for a given fiscal period may be tested by the experience of last season, by the experience of last year, or the last several years. It is wise in this connection to remember that there is a general business principle involved. Business for the most part is a going concern. The prices, for instance, of most commodities are not made from the foundation up day by day. To-day's prices are but a modification of yesterday's, and to-morrow's will be merely a change from to-day's on the basis of changing conditions. A compara-

tive view of one's business is therefore quite essential to careful management.

Suppose an offer is made that one buy a share in a business. This, too, is a going concern. The problem is to determine a fair value of a share in this business. One man in a situation of this kind said: "Let me see your records of gross sales for the past three years and I will tell you what I will be willing to give you for a share of your business." With these facts as a basis of comparison he made his estimate of the value of that particular concern.

The point to be emphasized in this connection is that data which are presented to the business manager should be compared with all other kinds of facts that will in any way test their validity. Records should be kept with this aim in view. Comparison is essential for a more complete knowledge of one's own business, and some basis of comparison is needed to check up data coming from outside sources. An essential element of all business research is this test of comparison.

10. *Mechanical and Mathematical Tests.* Where the method of presentation of business facts takes the form of charts, graphs, or maps, it is a wise policy to apply certain simple mechanical and mathematical tests. These devices should be tested in the first place by the general principles of construction. Such rules have been stated and illustrated in the preceding discussion. They should now be recalled and applied in the inspection of the charts, graphs, and maps. The obvious purpose will be to see whether or not the rules have been followed.

It is particularly important in the case of comparative lines and figures that such mechanical and mathemati-

cal tests should be applied. It is so easy to exaggerate the movement in the chart lines or to level out the curves, that comparisons are both difficult and deceptive. The unit used as the scale of construction for these lines must be carefully considered. Even the position of the line or figure on the chart may have a special significance. If the base line in the chart does not represent zero, but some high figure, the position of the lines may be misrepresentative. As has been said, where the comparison lies in the relative size of figures, it is extremely difficult to secure a fair and true judgment.

There is further the question of the relative movement of the lines in a chart. Suppose one has plotted the total production of a given commodity through a definite period. Assume, also, that on the same chart there is drawn a line representing the value in dollars and cents of this commodity. In case these two lines move together in the same direction, what conclusions may be drawn? On the other hand, suppose that they move inversely or in contrary directions — what different conclusion will follow? It will be seen from these illustrations that the entire character of a chart or graph may be changed by mechanical means. It becomes necessary, therefore, to inspect these mechanical means critically.

There is also the question of the area of figures. Where such geometric figures as circles, squares, rectangles, cubes, or pyramids are used for graphic presentation, there is constantly the mathematical test of size; presumably, there is a direct relation between the relative sizes of these figures. It is to be remembered, however, that figures of two dimensions, length and breadth, plane figures, vary with the squares of their dimensions, while solid figures, those with three dimensions, vary as their cubes. If

these figures have been constructed by mathematical principles they must also be judged by the same principles.

11. *Tested by New Angles.* It has long been a familiar saying that all roads lead to Rome. This may mean that the same idea may be approached from various points of view. Some methods will be more direct and simpler than others, but nevertheless a good test of the correctness of conclusions is to approach the subject from different angles. It is not always true in commercial investigation that the straight and narrow way alone leads to the haven sought. Roundabout ways may be followed not only without disaster but with very desirable results. Take, for example, the question of the farm-tractor market in the United States. Certain investigations had been made into this question before the market demand was disrupted and made chaotic by war influences. An estimate was made of the size of the potential demand within the United States for the farm tractor. In order to test the conclusions reached, the subject was approached from more than one point of view. One method used was to calculate the potential tractor market on the basis of the number and size of farms. It was learned from the United States Census that there are in the United States 6,361,000 farms, of which number 1,153,605 contain 175 acres or more, and 1,516,286 contain between 100 and 174 acres. The investigation assumed that the farm of 175 acres or more was large enough to support a farm tractor. There were, of course, many factors which would cut down this total number, such as lack of fertility, the roughness of the land, and the character of the products grown. To be conservative, therefore, the estimate was made that three-fifths of this number of farms really offered a potential market for the tractor. Likewise, the smaller farms,

running from 100 to 174 acres, might in certain cases afford tractor possibilities. One fifth of this number was taken as an estimate of those that might use this farm implement. From these calculations the conclusion was drawn that the total potential tractor market in the United States was approximately 1,000,000.

In order to test the validity of this conclusion, the subject was approached from the point of view of horse power used on the farm. The figures are as follows: The total horse power on the farms furnished by horses and mules is about 15,000,000. Assuming that 50% of this power might be furnished by tractors, the resulting demand would be 7,500,000 horse power, or an equivalent of 750,000 tractors on the average of ten horse power per tractor. To this must be added the displacement of gas engines now in use on the farm by the farm-tractor engine. The estimate here was 3,000,000 horse power, or an equivalent of 150,000 tractors, that furnished twenty horse power each. Further inroads would be made into the use of steam for tractor power on the farm by the new farm implement. This is represented by 2,000,000 horse power, or an equivalent of 100,000 tractors of the 10-20 type. The sum total of these figures also approximates 1,000,000 tractors.

The same problem was approached from a third angle. This was the buying power of the farmer. A comparison was made here between the purchasing power demonstrated by the buying of automobiles among the farmers with the possibility of directing this purchasing power to farm tractors. From this point of view, also, it seemed clear that the market for farm tractors was a reality. It was argued that if the farmers have already bought 1,250,000 automobiles for cash, they will be willing to buy an equal

number of tractors. From all these points of view, the conclusion was that there existed in the United States a very large potential market for farm tractors. The figures developed from two methods of investigation pointed directly toward a potential market for 1,000,000 or more. When these were checked up by some data on purchasing power, a third point of view seemed to coincide with the first two. This method illustrates the way in which the business facts may be approached from new angles and certain checks placed upon the data offered.

12. *Test of Adequacy of Data.* The constant weakness in business investigation is the drawing of a conclusion before sufficient data have been secured. The pertinent query in this connection is: "How much is enough?" A general principle that should serve as a guide in answering this question has already been developed. It is that the number of items to be inspected will vary directly with the similarity of the items in a group. A large field is left here for the individual judgment and no doubt common sense will direct one wisely, provided he understands the nature of the problem clearly. It may be that one cannot tell in a given case immediately and directly how large a mass of data should be accumulated. But the adequacy may be tested by indirect methods as suggested above.

Take an instance from the data upon which certain advertisements have been based. A popular magazine in order to show the advertising value of its columns made an investigation into 524 automobile sales. The survey was carried on apparently by means of a questionnaire sent through the mail. The point here, however, is to examine the adequacy of the data upon which the conclusions are based. One of these conclusions is stated as follows:

"In 80.5% of the instances in which the woman's 'say' was indicated, his wife wielded a potent influence." The question at once arises as to the proper basis for such a broad inference. The term "say" is entirely too indefinite for any valid conclusion. The same is true of the clause, "wielded a potent influence." But even apart from these criticisms it should be pointed out that 524 instances may or may not represent automobile sales in general. It is probable that they are not representative unless they have been most carefully selected, and certainly it is not a scientific process to tabulate indefinite data and from these draw a definite percentage, upon which a business policy is to be based.

Another conclusion drawn from the same investigation was based upon the fact that in every state where the subscriptions to this magazine were concentrated, in the same areas, there was a concentration of automobile registration. The inference to be made from this conclusion was that there is little waste in the advertising through the columns of this magazine. Brief inspection will reveal the fact that there is not adequate material for such an inference. It is, in reality, a case of coincidence and not of correlation. The basis, in fact, is altogether too meager for a valid conclusion.

The purchasing agent for a large retail grocer was recently complaining because so many of his purchases had to be made on the basis of a guess rather than knowledge. It was necessary for him to order large quantities of at least twenty different commodities, but the market influences affecting this score of products were known to him only in a vague and hazy fashion. After an order had been sent in he frequently wondered if he had in this case "guessed right." The reason for such methods in busi-

ness is, of course, that inadequate data have been furnished for establishing a policy or a rule of action.

13. *The Test of Immediate Serviceability.* Most business men work under a high pressure. Executives and managers, in particular, have thrust upon them a great mass of details which they must handle as best they can under the constant demand for their attention elsewhere. "A good executive has been described as a man who decides quickly and who is sometimes right. Probably ninety per cent of the answers 'Yes' or 'No' given by a business man are based on opinion rather than fact. The trouble is that the average executive cannot obtain and analyze facts quickly enough to base his decision on them." (Brinton, "Graphic Methods," p. 288.) This is probably an overstatement of the case, but if it is assumed to be true, it means that business data are being translated into business practice without careful consideration. When the affirmative or negative answer has been given, the business then becomes legally and financially responsible for results. This is sufficient evidence to show the need for making all business data immediately serviceable for the business manager. One test, therefore, which is to be applied to the data as it is presented is this test of quick use.

14. *Test of Too Much Data.* In close connection with the preceding point is the further test of overwhelming the manager with details. Methods of analysis and methods of presentation aim to give clear, concentrated summaries of dissimilar details. Unless this is accomplished, the research work is not adequate. It is, of course, wise, as has been said, to have too much rather than too little, but the ideal is to find the narrow trail between these two. One main point to keep in consideration is that when actual

proof is given, enough has been said. There is no need to pile up evidence when once the case has been won. Added facts may be true, but they are not needed, and data that are not needed are cumbersome.

15. *Indefinite Data.* It has already been pointed out that much business data does not lend itself to tabulation. This may be the case even where actual figures represent the data. The reason for their not being fitted to tables is that they are too indefinite in character. Too much has been taken for granted. There are too many outside forces at work that have not found expression in the figures. This makes them exceedingly difficult to interpret. An example of this kind of business facts may be shown by the following quotation from the report made by the Consumers' Information Bureau. It is said that this investigation of rural markets covered every state in the Union. Some of the so-called "interesting facts" are given as an illustration of indefinite data.

3. *"In what city do the men buy their suits, overcoats, shoes, etc., or do they buy altogether by mail?"*

All by mail.....16%

All in home town.....52%

Partly by mail and partly at home....14%

All in near-by city.....18%

Size of near-by cities: under 10,000...16%

10,000-25,000....8%

25,000-100,000...25%

Over 100,000...51%

4. *What is the average price of the men's suits, and are they (a) made to order, (b) ready-made, or (c) ordered from sample?*

Under \$20.....59%

Over \$2041%

Ready-made74%

Made to order.....26%

5. *Have you a labor-saving kitchen cabinet, in which to keep dishes, flour, spices, utensils, etc.?*

Have cabinet44%

Do not have56% "

Some interesting information may be gleaned from the "interesting facts" given above, but they are too indefinite for any precise treatment. Even a brief inspection will reveal to any one many of the elements of haziness contained in them. The chief reason for these elements lies in the character of the questions asked. It is not possible to gather by means of such questions business data that can be scientifically classified and analyzed.

History and Prophecy in Data. The business manager will probably want to inspect the material which comes before him primarily to discover the present conditions of his business. He may have as a secondary purpose, however, to gain a background for immediate judgment and also to isolate the facts that point to the future. It is a part of the task of the manager to know what to avoid as well as to know what to emphasize. In order to act wisely in this matter, it is necessary for him to look into the history of his own business and then to turn prophet in order to anticipate the future. For this secondary purpose he needs a historical survey of the experience of his own concern and he needs to have selected for him the most essential facts that show the trend of affairs.

There is now a disruption of old market conditions. Business tried to go on as usual under a war demand but quickly found that this was impossible, because a war demand was not a usual demand. Business managers were keenly alive to the rapid changes that were taking place and they were anxiously scanning their own records for some clew to these changes. In the period of readjust-

ment that is upon us, some kind of calculation must be made. Progressive business managers are looking ahead anxiously to these changes of reconstruction. Even now they are beginning to collect business data with a view to forecasting these changes and anticipating their effects.

Business Facts and Business Policies. It has been said that the moment of interpretation is the vital and crucial moment. All too frequently this time comes under heavy pressure of duty or of persuasion. Without time for reflection a momentous decision must be made. In a surrounding of this kind it is most difficult to be impersonal in judgment. Under the persistent call of duty, or under the subtle influence of another's persuasion, the business manager must seek to be sternly just at all times. It is probably true that the time and appeal pressure will determine the extent of inspection for testing business data. The natural consequence is that some rules of thumb still persist or are likely to develop.

The leaders among credit men have been among the first to appreciate the need for more careful analysis of trade conditions. But even the most progressive of these are still bound by rules of action which develop from general experience. Take, for instance, the financial business statements that are now usually demanded as a basis of credit relations. From these statements the credit man will instantly select certain items upon which to base his judgment. These items will at least be the first step in analysis. On one side of the account will be the "quick assets," or the "liquid accounts," as they are variously called. On the other side will be the liabilities. It is the general practice for the credit man to rely most on these items for forming his judgment. The liquid assets will

be made up of cash and the bills and accounts receivable. Now, in spite of all this appearance of careful and thorough analysis, a general, empirical rule is used. "Credit men have a rough rule that there should be \$2 of quick assets for every dollar of current liabilities. Also, the total of the liquid assets should be about sufficient to pay half the current liabilities." (Skinner, Kramer, and White, "Credits and Collections," p. 73.) It may thus be seen that there is still a temptation to put new wine in old bottles, by attempting to fit business facts into the old framework of rules-of-thumb methods.

It is not meant to imply by this statement that such an inspection of financial and business conditions is the sole basis upon which credit is granted or refused. These precise data are once more fitted into their framework of intangible and untabulatable facts. One of the leading credit men of the country has indicated that certain other essential characteristics are necessary for an intelligent granting of credit. These items are the character of the business manager, his ability as a business man, and the amount of capital under his control. The point is that in the midst of all the new inquiry there still persists the old rough-and-ready rule for judging business data.

Statistics as a Method. Much emphasis has been placed in this discussion upon the need of comparing business facts. Nothing that is said here should take away from the desirability of making such comparisons. It must be pointed out, however, that such comparisons are usually based upon those facts that are fitted to be dealt with by purely statistical methods. Again and again, attention has been called to the more or less obvious fact that data which can be tabulated are not the whole business story. In fact, most comparisons are unsafe when complete re-

liance is placed on statistical data alone. "Too frequently the desire for statistical regularity and conformity is so dominant that the limitations of both statistics and statistical method are forgotten or ignored. It is inadequate simply to test the appropriateness of statistical devices. It is the condition affecting the origin, methods of collection, tabulation, and so forth which must be kept in mind." (Secrist, "Introduction of Statistical Methods," p. 467.)

A warning of this kind is needed lest one who takes up commercial research for the first time gives too enthusiastic an acceptance to these statistical methods. Their completeness and their "smug finality" tempt one to rely on them wholly. Too great assurance is dangerous. Business facts, to be judged rightly, must be thrown on the background of that seething vortex of dynamic forces called business. There are so many factors of prime importance unaccounted for in the charts, graphs, maps, tables; there are the uncontrolled will to buy or to refuse to buy of the individual consumer, the whim, the fancy, the prejudice, the tradition, and the unexpected reaction of those unknown persons that make up a market. To-day it is possible to go only a little way in reducing these factors to statistical method, and yet all commercial research is centered finally in the consumer. "The consumer is king."

The great industrial revolution in England came from transferring thought, skill, and intelligence to machines. The superior knowledge of the individual could thus be reproduced thousands of times. His mental capacity embodied in iron and steel could work day and night without weariness. The results of this transferring of human capacity to inanimate objects have been one of the great

wonders of modern times. Possibly something of this same kind can be done in the commercial world by the use of statistical methods. At present, however, such methods can by no means supplant the business manager. He can divest his mind of the great burden of carrying the countless details of business, but he is thus only clearing the decks for better thinking. Clear, intelligent, far-sighted, careful thinking is to-day at a premium as never before. In this new revolution of commerce, statistical methods may play an important rôle, but as far as may be seen to-day they are no more than a mere vehicle of expression and are only as valuable as the data which they carry.

Superiority of Tables. Of all the statistical methods that have passed in survey, in this discussion, the one that will probably prove best for all-round serviceability is the tables. In the first place, these show the facts. If they have been properly constructed they also carry with them the means of checking up these facts. And again they make details easily available at the same time that they carry convenient summaries and the concentration figures. Very often the tables present the results of comparisons in their percentage columns. They thus enable one to make comparisons of comparisons with relative ease.

These tables, however, to be of such superior service must be well made. This means that the material which they carry will have been carefully collected, thoroughly analyzed, and scientifically classified. It means, also, that all kinds and varieties of data have been reduced to some common principle which in its turn can directly be translated into the terms of the immediate business problem. "Classification is a prerequisite for discrimination, and

discrimination is essential to scientific study." (Secrist, "Introduction to Statistical Methods," p. 125.)

On inspecting a statistical table, there is not only the accuracy of the details of fact, the summaries, and the mechanical construction of the table to be scrutinized, but there is also need of observing with care the column arranged to take care of the unclassifiable material. Almost every table will have a catchall for miscellaneous or unclassified data. This column needs watching. It may be that some very essential facts will have been thrown into this scrap heap. The size of these miscellaneous items and their importance and the reason why they have not been classified are all matters for inquiry.

There is also the integrity of the table which is to be tested. A great French scholar once pointed out the fact that in these days of highly specialized research it becomes impossible for the average man to check up the details of the numberless investigations that are being carried on. Confidence, therefore, is necessary in the integrity of investigators. There is need of what he very cleverly called a "scholarly conscience" in the matter of research work. The same principles hold true in commercial investigation. No artistic skill in line or figure can or should possibly take the place of classification and clear analysis. Inspection of statistical tables should bring them to this crucial test.

Conclusion. When the mind of the executive consents to a conclusion that has been reached, the die is cast. The process of research is then complete. Investigation has done its work. What remains from this moment forward is an administrative task. The problem then passes beyond the bounds of research.

This means, in other words, that business facts have

been translated into business policy. The conclusion becomes a rule of action. When the results are affirmed by the judgment of the business manager, there will follow all the financial and legal responsibilities that exist in all methods of carrying on business. Just as the goal of all statistical analysis is the comparison of data, so the goal of all business research is an acceptable conclusion for a business policy.

CHAPTER X

ORGANIZATION FOR RESEARCH

Research work as incidental — Research department — Trade associations — The advertising agency — The auditing firm — Business-research companies — The organization necessary — Training of the investigator — Equipment for research work — Conclusion.

In order to carry on any definite line of business activity, it is practically necessary to have some sort of organization especially constructed to meet its needs. It has often been said that all types of business organization rise to meet new demands. This has been one basis on which the rise of new middlemen has been explained. There was a time when the business man was a manufacturer, a merchant, a warehouse man, a financier, a wholesaler, and a retailer combined. But compared to the modern complex business that was a simple and primitive type of organization. It is always necessary to have new types to fit new conditions, and, just as it is a serious problem to select the proper channels of distribution for one's product, so here in the matter of research it is extremely important that an organization well suited to this type of work should be made.

There are several possibilities from which the business manager may make his choice:

(1) An individual may be selected from the working force who seems to have a "bent for figures" to take on the extra work of investigation. He is the one to whom all matters of this sort are referred; incidental to his

regular duties he collects what facts he may and analyzes them as best he can. Sometimes this work is subordinated so much as to make it a part of the duty of the sales manager or the purchasing agent or accountant.

(2) A separate department may be organized within the establishment. This research department may be in charge of a manager, alone or with assistants. This stage of development marks the true realization of the value of research work.

(3) The business manager may work in coöperation with one or more trade associations who have an educational department for research investigation. This method of coöperation has many things in its favor.

(4) The business man may call in the services of an advertising agency. This type of institution is more and more emphasizing the research phases of its business.

(5) There is also the auditing firm, or the firm of expert accountants, who, like the advertising agency, is turning more and more to this work of investigation.

(6) There are the more highly specialized business research and development companies. This kind of organization represents the most modern type of functionalized middlemen. Which of these various kinds of organizations shall be used in any individual case is a practical question.

Research Work as Incidental. It has always been necessary for any progressive manufacturer or merchant to make some kind of study of his business. In the small organization and in the early development of wholesale and retail organization this work generally fell to the lot of the manager. He was supposed to supply the brainwork for the entire business, and as best he could he secured a basis in fact for his judgment. When the emer-

gency arose he would seek from all sources available the best facts to be found and analyze these under the pressure of an immediate need. Sometimes this kind of work was given over to a man in the organization whose bent of mind led him to careful and systematic study. There are people to whom it seems a matter of second nature to put down general observations and experiences in systematic form. But in all cases of this kind the investigator was a chance man and never especially trained for the work. At one time it might be some one in the purchasing end of the business; or, again, facts were sought from the sales organization; but usually the victim in a case of this kind was the bookkeeper or accountant. He was presumed to be able to "dish up" the proper kind of data on demand. It was necessary for such investigations to pass away before a more efficient type of research could be made.

Under incidental investigations the work is usually choppy, disjointed, and almost never carried on to the point of reaching reliable results. With an organization of this kind, also, it was never possible to have the real equipment for research or the necessary training or even the leisure time and ample opportunity for careful and systematic work. In other words, all parts of the investigation were incidental. It was a work of mere expediency. Research was a by-product of the real day's job.

Where a business is small and the organization is simple, it may still be a wise thing to make the investigation of business an incidental part of a day's work. It may even be necessary for the manager to carry the burden of securing the required information for the business policy or the rule of action. To aid a manager in this situation,

who is already hard pressed with the many details of business, there are the various simple devices for filing, analyzing, and summarizing business facts. Even a meager equipment of filing cases and of charts or maps would greatly aid in carrying on the needed research work. With insufficient equipment of this kind, but with a clear understanding and a full appreciation of the value of research on the part of the manager, it would be possible for him to train up his working force to be of great assistance to him in this matter. In case of a problem of great importance, it will usually be the wisest policy, however, for such a business manager to seek the really expert advice of some specialized investigator.

Research Department. When the importance of research work becomes clearly recognized, there may be devoted to it a special department that becomes a distinct part of the business organization. This will mean a type of specialized activity where a new function has been isolated. Not long ago the advertising manager was uncertain as to his position in the organization of a business. Even to-day in many concerns the question of the scope of his authority has not been fully answered. This will likely also be the experience in regard to research work.

There are recognized to-day four distinct types of so-called functional managers: (1) the production manager, whose duty it is to supervise the work of manufacturing with all its subordinate details; (2) the financial manager, who is the modern type of the old treasurer; (3) the sales manager, whose duties are clearly indicated by his title, and (4) the administrator. This individual has for his immediate task the bringing together of all factors within the business so that they may work together consistently

and harmoniously for a common purpose. A part of the duty of the administrator is to organize the office force and to be responsible for what has been called the "facilitating agencies" of a business. In smaller concerns these four types are not often clearly defined. Some or all of them may be combined in one individual. Where these managers have been recognized the work of the research department would be hard to place. It would certainly be subject to the administrator, because it is a part of the concentration of business data. Research work might possibly be under the direct supervision of the sales manager, because he first of all feels the need of the facts which the research department must gather. And yet each manager is in need of more knowledge and must use the research department to its fullest advantage. The cardinal principle in research work is coöperation.

The types of organization will, no doubt, be influenced by the personality of those in charge. One type might work more successfully in a given concern than another. No sure place for the research department can be determined and probably none is necessary. Since, however, the data from this department must finally come to the administrator or to the general manager, it will be necessary for that department to keep in direct touch with it. It would not be illogical, for instance, for the research department to be connected directly with the office of the administrator. A suggested type of business organization which includes the research department is given on opposite page.

In a mercantile establishment the production manager becomes the purchasing agent. Otherwise the type of organization need not be greatly changed. It is probably true, however, that the sales manager becomes of

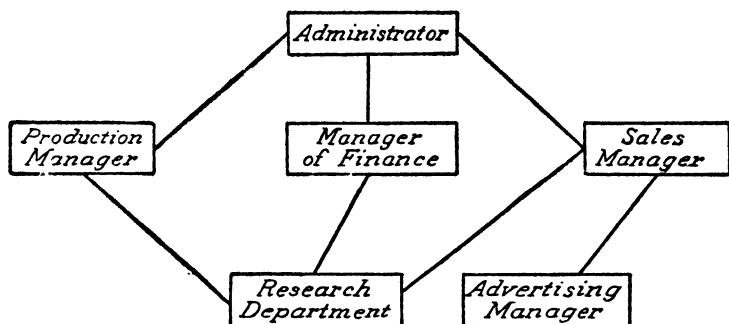


FIG. XII

dominating importance in this kind of business. The need for a knowledge of facts is, of course, common to all kinds of organizations. There should also be the same sort of cordial coöperation. No research department can attain its highest success unless a constant stream of raw material in the form of business facts pours into it from all sources — this means from every department of the business as well as from independent study and analysis. The research department should be a kind of laboratory for the business concern.

It has been said that a research department may appear in all types of organizations. It is also true that a research department may appear in all kinds of business. There have been established research departments, for example, for research work of general educational character. They have become a part of the splendid work carried on by the large trade associations of the country. Sometimes they appear in the form of a distinct department organized after the manner of other departments; sometimes they appear merely as a part of the duty of the secretary of these trade associations. In this case, however, the only

difference is that the outlook is broader, the scope of the analysis more inclusive. A more detailed discussion of the research department as it appears in trade associations will be given later.

Sound business policies are essential for long-distance selling where a guarantee is given as in the case of the large mail-order houses. One of the largest mail-order houses in the country has a well-organized laboratory for physical and chemical analysis of the commodities which it handles. Working along with this laboratory force there is a group called the "good-service department" which checks up the stock by the description in the catalogues, and where there is room for doubt as to the accuracy, commodities are carried to the laboratory for analysis. In this way the analytical tests are at once brought into use in the control of the business. Some of these large mail-order establishments are likewise training their own force to aid them in gaining facts for a more efficient method of carrying on business. In one, for instance, there is a constantly open offer to any member of the working force that demonstrates an error in the catalogue. In addition to this, these large establishments have expert investigators in the field who keep constantly in touch with consumer conditions. They get the news about the crops in the various parts of the country as reliably and more quickly than the government. By this means the house is able to adjust its sales policy to financial and trade conditions throughout its wide market.

In addition to these types of research departments there is another where expert knowledge is sought for the purpose of gaining good will or affording service to the patrons of certain establishments. This type is repre-

sented by the merchandising bureaus that are being organized throughout the country by daily newspapers and periodicals. In New York, Boston, Philadelphia, and Chicago there are many daily papers that have made investigations of their local markets and have these data on file for their own use in demonstrating to advertisers the value of their columns. In smaller cities, like Indianapolis and Seattle, the daily papers are imitating those of the larger centers. Very interesting data are being gathered by these bureaus and oftentimes careful and admirable work is done by them. In most cases this work is in charge of a separately organized department. Many magazines have done work of the same sort. A conspicuous example is the Curtis Publishing Company which has already been mentioned. There is, here, a definite organization for research work in the control and under the supervision of the advertising manager.

Other types of institutions likewise find it advantageous to seek good will through the same medium. Some of the larger banks throughout the country have established statistical and research departments, especially for the study of problems connected with certain commodities and for the study of all new commercial and industrial developments. Much good work has been done by some of these institutions in discussing the merits of the trade acceptance. From time to time pamphlets are published and distributed free of charge by these banks to all their patrons, and to those outside who might be interested in the subject discussed. Grain brokers, stockbrokers, and others who deal in stocks and bonds have called to their aid statistical experts for the securing and analyzing of essential facts. Frequently in these institutions, also, there is a distinct research department.

Trade Associations. The work done in business research by the large trade associations needs special emphasis. As has been said, these associations mark the new phase in the development of business relations. They are a very great educational factor in the life of the business man, because they furnish him a means of getting a new point of view. A merchant almost inevitably forms a different judgment of his competitor when he meets that competitor as one among many good fellows at an annual conference where they discuss freely and openly their common problems. Most of these organizations have as one of their definitely stated aims a fuller knowledge of their business; men gather from time to time from all parts of the country and thus bring all their varied experiences for the solving of their various problems. The leaders in the development of these associations were quick to see the need for research work in order that the education of their members might be more rapid.

As an evidence of the work done along the line of research, the following items were taken from an address at an annual conference of the National Association of Credit Men for 1917. The Des Moines Association of Credit Men has appealed to the retailers of that city in order to awaken them to the realization of the need for better business methods. The same is true of the Retail Grocers' Association of New Orleans. The Boston Credit Men's Association recently distributed 75,000 cards, entitled, "Why Men Fail in Business." The Peoria Association of Credit Men printed and circulated a small pamphlet for the purpose of telling retailers that "A successful business requires a clean stock, turned frequently; careful crediting and close collections; econom-

ical expenses; a fair percentage of profit, and finally to take a complete inventory January 1, 1917." The Wisconsin Retail Lumberman's Association has urged upon its members the use of a simple but comprehensive cost-accounting system. The National Retail Hardware Association has been studying the accounting needs of the retailer in hardware trade. The National Association of Retail Grocers recently issued a pamphlet entitled "How the Retail Grocer may Better Know his Business." The National Retail Dry Goods Association has submitted a report in two volumes entitled the "Classification and Distribution of Expense in Retail Stores." The National Implement and Vehicle Association has been working for more than ten years to educate the retailers in better business methods. The National Association of Wholesale Clothiers and of Retail Clothiers have appointed a committee called the Joint Committee of Wholesalers and Retailers. One of the main purposes of this committee is to discuss the common problems in their particular line of trade.

On a broader scale than this, other associations have been taking up the work of research. The Associated Advertising Clubs of America has organized a retail service and business system department. The aim of this department is to carry better business methods directly to the retailer and to demonstrate how they may be made operative. Certain trained men, called field men, are to visit the retail merchants and consult with them regarding every phase of retail management. The National Wholesale Dry Goods Association likewise has appointed a special committee that was instrumental in creating what is known as the National Mercantile Educational Association. "The sole aim of this association is to

solicit and coördinate the various efforts that are being put forth in the United States at the present time." There is also the Chamber of Commerce of the United States which has in mind to form a retail-service bureau, "to conduct a nation-wide research, analyze retail merchandising, and place at the disposal of all retailers the results of all investigations together with recommendations, standardized methods, and so on." This powerful organization can work, of course, through the various local chambers of commerce for carrying on this investigation.

This type of organization has been a new development in business, and has shown many chances for bringing business men together for mutual helpfulness. The underlying spirit in most of the trade organizations is that of coöperation. This is the same spirit which lies behind all successful research work. There will be no great difficulty, therefore, in making trade associations a splendid vehicle for research that may be readily adapted to any one's needs. Already much confidence has been established by means of conferences that are held from year to year by trade associations and the old-time distrust which one merchant felt for a competitor is rapidly disappearing. A better realization of mutual interests has already come.

In most cases the trade organization is largely controlled by the secretary. All new work is developed by him and therefore his attitude will determine the extent of all educational movements. Many of these men have already realized the significance of commercial research and several are now making their offices the clearing houses of valuable information. Certain associations have secretaries that send out daily news bulletins for the pur-

pose of keeping the members who are interested in touch with all new developments that may affect their business.

The Advertising Agency. Originally the advertising agency was merely a broker in space. For a number of years these agencies devoted their entire efforts to selling advertising space in newspapers and magazines and on billboards for a stipulated commission. This work still continues, but is growing less important year by year. The agencies are turning their attention more and more to trade investigations. They are finding that they must give sound business advice to their patrons on various subjects, and in order to be in a position to give such advice, it becomes necessary for them to know the facts. "The good advertising agent is a high-grade business adviser. . . . He offers the customers ideas and practical aid, born of experience, together with a real concern as to the customer's success. . . . Advertising is to-day but one feature of the work of a real agency." ("Selling Forces," pp. 68-70.)

It has become necessary for advertising men to know more about the real business of production and of salesmanship. Many advertising experts have long claimed that advertising is only a special kind of salesmanship and that, therefore, if they knew advertising, they knew all that was required of them. Experience has demonstrated, however, that the good advertising agent must combine, either in a single individual or in an organization, and in these later days it is usually the latter, the qualities of a good business adviser, of a salesman, of a successful manufacturer, and some skill as an artist and writer. (Cf. "Selling Forces," p. 78.) "These men are students of commerce, of economics, of distribution, and trade conditions; they are alive to financial condi-

tions in practically all divisions of business. They know about exports and imports; they have studied commercial law, and together they represent a fund of business information such as no one man could get and such as no business man could hire outside of an institution of this character." (*Printer's Ink*, July 20, 1911, p. 132.)

It is predicted also that agencies of this sort will turn more and more in the future to the work of commercial research. The writing of the copy, the artistic work on the advertisement itself will become only the crowning effort of a long course of study and investigation. "I will venture the prediction," says one advertising manager, "that five years from now no advertising agency handling national business will be complete without a staff of commercial salesmen and investigators, stronger in sales ability and trade investigation than in writing copy, outlining a campaign, or getting a new client." (*Printer's Ink*, May 25, 1910, p. 9.)

A typical example of the organization of an advertising agency is illustrated by the following chart.

It will be noted from this illustration that only one part of the agency's organization is devoted to investigative work. In this particular case this department is called "contact" and has two subdivisions, one for plans and one for selling. Under another division called "production," there is one department that is entitled "statistical." It is probable that in this case the investigative work is performed by these three departments. There is no doubt, however, that the experience of this particular advertising agency has shown that these three departments really lay the foundation for all their advertising success.

There are many such advertising agencies throughout

ADVERTISING AGENCY

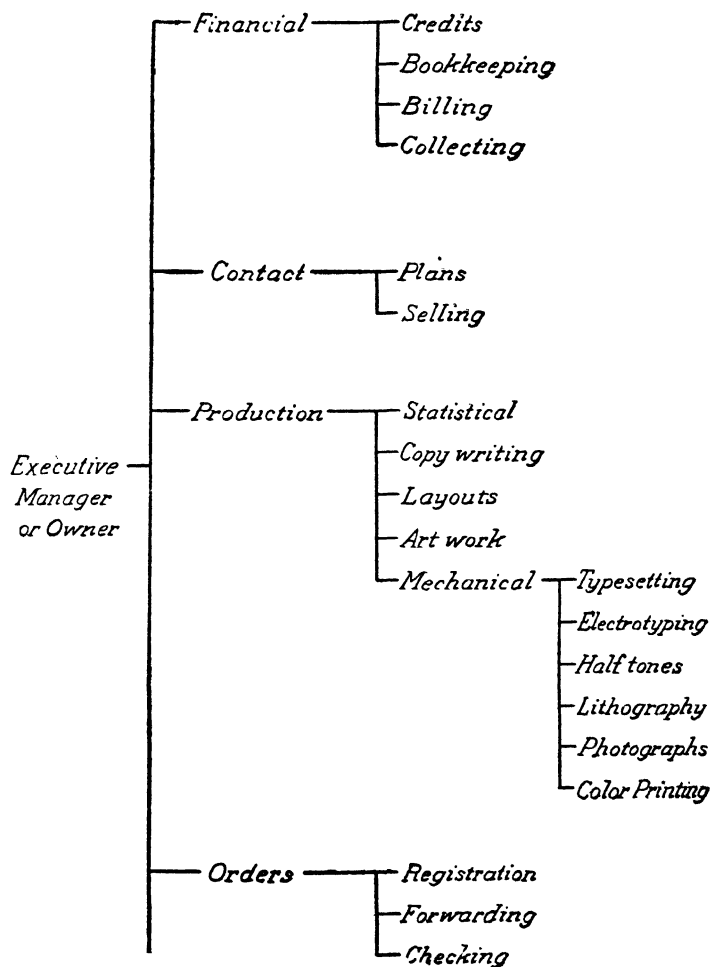


FIG. XIII

the country. The individual manufacturer or merchant will find at hand a reliable firm ready to devote its trained and organized force to the solution of any problem that has arisen. Up to this time, however, these agencies have paid most attention to the extension of the market for the commodity under consideration. The tendency seems to be for the work to broaden in scope until the agency examines all parts of the business thoroughly enough to determine whether there should be an additional advertising expense or whether the advertising should actually be cut down. Many agencies boast of the fact that they advise their clients not to advertise. Several large manufacturers and merchants employ these agencies even though they themselves have an organized research department. In any case it is evident that here at hand is the machinery for trade investigation whenever it is wanted.

The Auditing Firms. Along with many other business changes there is developing to-day a new conception of accounting. Some years ago this subject was confined to simple methods of bookkeeping, by the single or double-entry system. The scope of work here, however, has broadened continually until to-day there is sought a body of principles which may be applied not only to all accounting problems, but also may include nearly all the statistical work done by the business manager. This change has really been from a mere record to avoid mistakes, which was the primary purpose of the old-time bookkeeping, to a highly developed organization for business control. This fact accounts for the remarkable development of cost accounting. It is clear, of course, that a careful study of costs is a fundamental necessity in the more intelligent management of a business.

Many expert accountants have already seen the handwriting on the wall. They have learned that they must be able to do more than merely to find errors in the books. They must rise beyond the rank of mere business plumbers, thumbing through old and musty ledgers for the old, forgotten error and the minor mistakes in addition and subtraction. Like the advertising agencies, the expert accountant of to-day is becoming a business adviser. The reports of an audit company will frequently carry a broad survey of the business and will conclude with recommendations leading toward a better and more intelligent control. In other words, the auditing companies, like the research department and the advertising agency, are working for the business manager in a new sense. So skillful have many of these expert accountants become that they can reproduce from the records of the books the entire past of a given business, in such a way as to show mistakes in judgment, errors in management, and to point the way to sounder business policy. These men are in an advantageous position of knowing the facts, so far as the records go, at first hand.

These companies, also, are reaching out for other knowledge than they sought in the past. They are asking to-day what use can be made of accounts, particularly for business control. It has already been shown in this discussion that the material which the accountant uses is a most valuable source of business data. The full appreciation of this has not yet come, but many men are beginning to understand the value of these facts. The accountant sees that if he has the capacity to use the facts which come to his hand he may become an expert business investigator. Much of his training to-day is for that purpose.

The result of this new movement among the accountants may appear in the reconstruction of accounting systems. When one understands that business records of the past are not useless, when one sees that they may be made to live again by using them for more intelligent control, it is likely that they will be treated in a far different way. Like the work of the advertising agency, this work of the expert accountant grows broader from year to year. There is, for instance, the discussion of budget-making for a business as well as for state and country, and this work, too, is for the purpose of more intelligent business control.

The merchant or the manufacturer may call in the expert accountant to examine his records and he may gain from this business expert much sound advice to help him in the future. More and more the merchant and the manufacturer are asking of the expert accountant that he shall know more than the figures. To-day he must understand the principles lying behind those records. The business man on his part is increasing in his appreciation of the value of this kind of expert. Frequently the organization that has a research department of its own asks an auditing firm to come in and check up on its records in order that it may have a new point of view.

Business Research Companies. To meet this new demand for broader business knowledge, there has come into existence in recent years a new type of organization. This is the business research company. The definite aim of such an organization is to seek the pertinent and essential facts connected with any given business. Many of them claim that they are prepared to carry on an investigation in such a way as to show where the weaknesses are and how these may be strengthened. They claim to be

able to afford to the business manager a broader basis in fact for his decisions. Their work, it is claimed, underlies the work of the advertiser. It is more fundamental; it is the first necessary step.

It is no doubt true that such companies, when well equipped for their business, can offer the manager a far broader view than he can gain by his own study. In the first place, they are wholly impersonal in their attitude. The investigation becomes for them a problem to be solved, just as the scientist takes his problem into the laboratory for solution. The essential factors are isolated quite apart from the individual business interest. This enables such a research company to give the manager a new point of view.

Many organizations of this kind are equipped to make both a local survey and a national investigation. They will carry on this work either by mail or through the medium of personal investigators. It is also clear that the efficiency of such a research company constantly increases with its increase in experience just as a physician grows better with his years of practice. Data will accumulate for it year by year and will enable it to apply tests such as the individual business man cannot make. Such work is still new, but is making rapid progress in the larger business centers. The future for these research companies is very bright. When they are well equipped with a trained force for business investigation, they will become a strong factor for more intelligent business control.

There have been for several years a number of companies of this character who claim to be business prophets. They work out from time to time what they call a business barometer, by means of which the manager may an-

ticipate trade conditions. Some of these companies construct index numbers for the purpose of showing the business trend. Others collect from numerous sources interesting and useful business facts which they summarize and place before the business manager every morning for his survey. By this means he is able to keep in touch with all those facts which affect his own business. The volume of business literature is becoming so vast that no individual is able to read it all. Such summaries become quite essential and, of course, if they are well made are of great practical benefit. The business barometers, however, have not yet found their way fully into the confidence of the business man. He still doubts their fundamental soundness. He does not believe, for instance, that the effect of periodical changes can be reduced to figures. One cannot judge beforehand, he says, the effect upon prices of the election of a Republican President or of a Democratic Senator, or of a Socialist Congressman. It is not possible, either, for one to reduce to a mathematical formula the effect of the election of a mayor in one of our large cities. Yet such factors enter into the construction of the business barometers. They no doubt have a useful purpose and afford a method of broad survey such as no individual could possibly secure for himself. Up to this time, however, they cannot be called scientific.

The Organization Necessary. Whatever form research work takes it must have organization. The pertinent query, therefore, is, What is the best type of organization? Such a question cannot be answered directly. One principle, however, is clear. It must be of such sort as to give the control of method and of work into the hands of some capable manager. Like every other department of

business, it must have its policy, it must have its system, it must have its personnel. As the work grows, the organization will become more complex and the manager will secure experts as his assistants in statistics, in drawing, in copy work, and so on. It is possible to point out only in a general way the essential parts of the organization for commercial-research work.

The first requirement for research work is a knowledge of statistics. It is wise that the manager himself should be thoroughly acquainted with statistical methods of analysis and presentation. In any case, there must be some one in the department who can make use of the principles of statistics. A large New York bank, that has a well-organized research department, says that "The statistical department includes a number of men who are highly trained in their work." (Personal letter.) Another large bank writes that "We have a definite organization for research purposes; it is new and in a formative condition, but I would outline it about as follows: (a) statistical and general economic research. On work of this type I now have, beside myself, two trained assistants and some clerical help." (Personal letter.) Experience has thus shown the need for at least elementary statistical training. In the past statistical work has had to do with social and financial investigations, but this new movement of business research is carrying over the same principles. The manager of one research department has written: "As to the kind of training demanded for this sort of work, I can make my reply perfectly definite to you by saying that it is a combination of practical statistical experience and commercial research. I am disposed not to take any one, if I can possibly avoid it, who has not had

statistical experience in state or federal service, as it is the only training school I know equipped to give efficient training in this direction." (Personal letter.)

The second requirement for the organization of research work is that there shall be established some system for filing. Data of many different kinds will be constantly pouring into the research department. There is immediate need to file away the material in such manner that it will be readily accessible when needed. To-day so many business facts are fugitive; they seem of no importance because one does not need them at the moment they appear. It is a useful practice, however, to keep such facts where they may be found without difficulty when the occasion for their use arrives. Many a research manager has been glad of his practice of filing away material that seemed at the moment of no great value. There are many kinds of filing systems which will serve the purpose admirably. Some of these are simple and some are very complex. The kind that will be used will depend upon, first, the nature of the work, and, second, the volume of the business which will come to the department. A small file will serve a small business, but a large firm will demand a more complete system.

For taking care of the filing system and for general tabulation work, some one is needed who has had experience and training in this line. It is not every one who is capable of filing material in a satisfactory manner. There seems to be a natural gift for work of this kind. There are those who find it almost second nature to work in a systematic manner; to others the rigid requirements of careful filing become irksome.

The main point to keep in mind in this connection is that the manager of research work must be free from too

much detail in the same way that any other manager is left free to think about his problems. A considerable part of commercial research can be done by a clerical force that has not had much training. There is much routine work to be done that requires time and energy and which the manager should not be compelled to do.

As the research department grows there will likewise grow a need for a librarian to take care of the books and pamphlets which are received. It is noticeable to-day that the number of books on business subjects has vastly increased. This is a part of the new phase of business. The business man is supposed to be a reader of books in a way that he has never been before. He is becoming a student; he must even become a theorist. In any case, he is not progressive unless he reads more than the newspaper or trade journal that comes to his desk. The large business will probably require the entire time of a librarian who will have training in the knowledge of sources of material and possibly in methods of filing and cataloguing.

The business man has never had a true sense of historical values. He has lived in to-day and planned for to-morrow, and has let the dead past bury its dead. This has undoubtedly been a mistake. Much of value may be learned from the history of an institution. Now and again, to be sure, business men who have retired from active affairs have found the leisure to write in the form of autobiographies the experiences which they have had in their business life. This work, however, is not sufficient. It is almost incredible but true that one of the largest mail-order houses in the world does not to-day have a complete file of its own catalogues. It is typical of large businesses that they do not know the history of their own

development. Part of the work of the librarian should be compiling such a history for use of the manager in any manner he may see fit. Unexpected knowledge will come to hand in this way. The business history of the country, for instance, may really be seen in the development of advertising. If these historical records are filed away or are utilized in some such form as to give the history of an institution, the work will be of very great value.

The research department requires, also, that there be some one who can write letters in attractive form and who can construct questions that will successfully secure the desired information. This, too, may fall to the lot of the manager, or there may be some one in the department who is specially trained along this line. As has been said, many business managers to-day are giving considerable attention to this subject of writing letters; correspondence is becoming a revived art.

There must be some one in the research department who can work intelligently with accounts. As has been said above, these records are being kept for a new purpose. He who is engaged in research work must be able to interpret in terms of business control the essential accounts kept by the establishment. Here, indeed, may be found the real weakness in the institution, the real cause for lack of success. If the manager of the research department is not acquainted with accounting methods and has no assistants who can take this work, it will, of course, be possible to coöperate with the accounting department and secure from that source the necessary knowledge.

Training of the Investigator. Work in commercial research will be just as valuable as the capacity of the investigator behind it is able to make it. This is true of all kinds of analytical studies. The value of laboratory

experiments depends directly upon the accuracy and the judgment of the investigators. What is true in science, is true likewise in business research. It is necessary to have a clear understanding of laboratory methods, including how to use apparatus, how to check up experiments, when and how to employ reagents, what difficulties there are to watch, what conclusions may be drawn from the reactions of the material under study. Something of the same sort is necessary in the training of a business investigator. Considerable native capacity is, of course, desirable. This should consist in the power of observation and accurate reporting of details. It has been said that the best advertising men are those who have had experience as newspaper reporters. This fact is explained on the basis that reporters are taught to observe details with accuracy and to report them with precision. Such power as this is of great value to commercial research.

In addition to native capacity, such as has been indicated, the investigator needs to have a "head for business." He must first be interested in the details of business, he must see the business problem, and he must be able to discern those intangible relationships between concrete facts and business principles. Some men are able to see business opportunities where others pass blindly by. The former will make far better investigators than the latter. He who walks along the busy thoroughfare with his head in the clouds is not likely to see the intensely interesting human element in the business relationships of to-day. The eye and the ear of the investigator must be constantly open and alert for all the data that may be found wherever he goes. Interest in business is a prime essential for the one who is to engage in commercial research.

It is likewise important that the business investigator shall have a methodical mind. Business facts are of varied importance and kind. Disconnected facts will lead one nowhere. They must be collected and collated so as to form a logical system to be analyzed. This means, in other words, that the investigator must be careful and systematic in his thinking as well as in his habits of work. Such capacity, also, is of prime importance to the business investigator.

As has been said, no one can go far in commercial research without knowing and being able to make use of statistical methods. These are the laboratory apparatus for the business investigator. He cannot work with precision or with anything approaching scientific carefulness without using them. Nevertheless, it must be remembered that the principles of statistics are merely a means to an end; they are the vehicle of expression and analysis, and not the substance. It is one thing to know statistical principles; it is quite another to apply them skillfully and intelligently. Both of these things are required of one engaged in commercial research.

It may be taken for granted that the investigator into business problems should have some knowledge of accounting. Problems of business are exceedingly complex. Those that seem simplest in the beginning ramify in the most unexpected manner. Sooner or later most of them will carry the investigator to the records of the business. Unless he is able to make use of these records intelligently, he will not be fully equipped for his duty. This requirement includes both the principles of commercial accounting and the principles of cost accounting. One need not be an expert in either of these fields for successful work,

but he does need to understand the principles enough to interpret accounts intelligently.

There are many other requirements for the ideal training of an investigator. He should, for example, be able to write business letters of an acceptable character. A considerable amount of his work will consist in securing material through the mail. He must have skill in making schedules. These will differ in some essential particulars in every problem taken up. Adaptation is needed in order to make the questions fit the particular problem. The duty of doing this successfully falls upon the investigator. He should also have a bent of mind for translating data into definite terms. This discussion has already pointed out the fact that a great part of business data is made up of estimated values. These are necessarily more or less intangible and yet they must be reduced to definite terms. The capacity for doing this must belong to the investigator.

It is assumed that he will also have a grounding in economics. This is so important as to become a fundamental requirement. It would be of advantage to him if he had certain manual skill in drawing charts and making graphs. In a large research department such work may be given to one specially trained in this art. Criticism and judgment of these charts and graphs, however, will be demanded from the manager of the research work. He will do this better if he has had experience himself in constructing them. It may be assumed, also, that the investigator will have a groundwork of general business knowledge. So much depends upon good judgment in the carrying out of every investigation, and good judgment demands a sound basis in a knowledge of facts. A fairly

clear understanding of general business conditions is a very large element of good sense in business research.

It is not possible, of course, to find any individual who has all these traits developed to a high degree. The requirements here are for an ideal investigator. Certain fundamental requirements, however, are so essential to accurate work and particularly in the guiding of the new movement, that such emphasis becomes necessary. It is probable that commercial research will quickly feel the lack of competent leaders just as industrial research has found it necessary to train competent leaders through years of patient work and experience. Such forces as commercial and industrial research will necessarily make their way slowly among the great masses of business men. Only the most progressive leaders will appreciate their value. It is highly important, of course, that in the beginning commercial research should have a high type of leadership.

Equipment for Research Work. The equipment for carrying on such work as has been indicated here will naturally vary with the character of the business and the importance of the research work. There are, however, a few essentials for carrying on any kind of competent research. One of these is good stenographic service. This is quite indispensable. There must also be some sort of filing system not only to take care of the large amount of correspondence which develops from investigations, but also for preserving in an accessible and convenient form the clippings and the maps, charts and graphs which result from this kind of work. It is quite necessary, too, that the research manager shall make the proper business connections. He must depend upon men in actual business for coöperation in his work. It is one of his

first duties to establish their confidence in his work and so to engage their interest and coöperative effort. It does not seem fair to ask business men to give freely of their knowledge and experience without any return except the gratitude of the investigator. There is a possibility of splendid coöperation on the part of these two parties that should be of great benefit to both.

An investigation may be either local or national in scope. In both cases it is practically required that the research department, and especially the business-research company, shall have a competent corps of investigators. This is an exceedingly difficult matter where the research covers a broad territory. Some companies have relied on unseen and unknown men whose capacity has been of the most varied character. It is never wise, of course, to select workmen who are to carry on their work undirected, sight unseen. This has often seemed necessary.

Sometimes the pupils from the commercial course in high schools have been employed under the inadequate direction of busy instructors. At other times members of business courses in Y. M. C. A.'s have been utilized. College men who are interested in business and particularly those who are carrying on courses in schools of commerce have been used in work of this kind. They often have free half days or leisure hours which they can devote to such investigations. In some cases it has been found possible to make use of traveling salesmen. Their work along this line has naturally been incidental to their main work of selling goods. This arrangement has not been and can never be wholly satisfactory. A man cannot serve acceptably two masters.

Of all these investigators it is probably true that the college men have proved most efficient. They are the best

all-round investigators to be found. For the most part they are reliable and they are more mature than high-school pupils and generally are interested in research work. Some advertising agencies have a corps of trained investigators who devote all their time to work of this kind. This is doubtless the best arrangement that can be made, but no single company can employ enough of such men to cover a wide scope of territory. The trained investigators, therefore, work intensively in certain trade centers and the rest of the territory is covered by mail or through local representatives. The last named are men in business such as clerks, or managers or even proprietors in small rural communities who are willing to serve in such capacity.

Conclusion. This survey of the organization for research work has been intended to cover all types. It ranges from the merely incidental work of a small organization to the more complex type of the business-research company. In every case the same principles of organization are seen to apply. There is no doubt but much improvement will be made in the near future in work of this character, but it is extremely important that carefulness and comprehensiveness shall be the primary aims from the start. Many new movements have suffered from incompetent leaders. There is tremendous importance in getting started right. While it may not be possible for the manufacturer or merchant to meet all the requirements indicated in this discussion, it should be possible for him to discover what the essentials for research really are. It is not every one who can investigate successfully. Indeed, there is need of a high type of training in work of this kind. If business is to become a profession, which

is the ideal expressed in this discussion, then a high standard of skill and capacity is demanded for research work.

NOTE: Commercial research work that is done only incidentally will require some mechanical devices for accuracy and speed of work. If there is much computation to be done, a calculating machine will readily justify itself. A slide rule is easily mastered and saves much time and labor and many errors. It is not expensive to secure a drawing board, a drawing pen, tacks, ink, and other material. There are many dealers who carry a complete supply of drawing materials and who will gladly give advice on the latest device for saving time, labor and errors.

CHAPTER XI

SOME FUNDAMENTAL ELEMENTS OF BUSINESS ANALYSIS

Three fundamentals — Raw materials and finished products — Raw materials — Finished products — Classifying commodities — Scientific analysis — Conclusion.

All research work into business problems is as yet in its early infancy. The first steps are being taken with some uncertainty and in a halting manner, because men do not know how to begin in the new field. The whole vast scope of business seems so complex, so interlocking, that there is no definite place to start. When the manufacturer or the merchant has once become interested in knowing more about his business the practical problem arises as to what facts to know. The solution here, of course, depends upon what one wants to know. This brings one again back to the fundamental question: What are the elements of business analysis? It is proposed now to discuss this highly important question.

Three Fundamentals. It is not enough to say to a business man: "You should know your business more thoroughly." His reply at once is: "How can I know my business?" The burden is then upon the adviser to find a workable method for analysis. There are certain fundamentals with which all analysis should begin.

One of the first obstacles to the acceptance of any workable method is the widespread and persistent belief that every business is unique, and that its problems, therefore, are individual and do not permit of generaliza-

tion. It will require years of education for the general business manager to divest himself of this persistent belief. He will probably scoff at theorists and will be disinclined to believe that any one on the outside can really know his problems. As one business man has said, "The practical business man will know all the problems and will have met them long before the theorists can realize them." It is this attitude which forms the greatest obstacle to intelligent commercial research. There must be certain fundamental problems that are common to all kinds of business. That we cannot to-day identify these is due to our ignorance, not to their non-existence. As a matter of fact, it must be true that as our knowledge extends we shall be able more clearly to outline the fundamental elements. From the very nature of the case, the more fundamental these elements, the more nearly common to all must they become.

It is held in this discussion that there are general and fundamental problems. What will here be said on this subject will have to do with the problems of marketing as distinguished from the problems of production. In this field of marketing, then, the general business problem, so far as the manufacturer or the merchant is concerned, falls naturally and simply into three parts. There is, first, the commodity, the article, or the line of articles, which is to be handled. Whether this commodity is something concrete or is an abstraction like the service of the professional man or the energy of the workman, makes no difference. In any case it is a product offered for sale. However the problem connected with it may differ in minor details, the essential principle is the same; namely, that one must know his product.

The second fundamental is the market which is to be

reached in selling this commodity. This means an analysis of demand, for a market is nothing more or less than a demand — that is, a human want for an article backed up by the required purchasing power. Whatever the character of the commodity, if it enters at all into the marketing problem of the business man, there arises the need of an analysis of the demand for it. Here, no doubt, there are many details that are unique for each commodity, but nevertheless, the broad outlines for the problem are the same for all. Just as the manufacturer or the merchant must know the commodity which he has for sale, so likewise must he know the demand or market for it.

The third fundamental is the trade organization for carrying the commodity to the market. Whether simple or complex, there is in every case some kind of organization. Is it the best possible one for marketing any given commodity? This question cannot be answered without an intimate knowledge of the unique details connected with this commodity. But here, again, the principle holds that, regardless of distinctive details, there is the universal problem of a trade organization. To the knowledge of the commodity and the market there must be added a knowledge of the trade organization.

These three fundamentals are, of course, vague and general in character. Probably no one would seriously question their existence. In fact to speak of them in detail may be emphasizing the obvious. And yet in taking up the subject of the fundamental elements of business analysis, it is necessary to begin with these obvious and generally accepted principles. On this basis the following discussion will be carried out. It is now proposed to show that certain other problems incident to the analysis of the commodity, to the analysis of the market, and to

the analysis of the trade organization are likewise general and fundamental. It is hoped that this survey of elementary business problems will be an aid to any one who engages in research work for the first time. A great American statesman at the time of a crisis once said: "If we can see where we are and whither we are tending, we shall better know what to do and how to do it." Belief in the soundness of this principle as a guide in commercial research has prompted a discussion of these fundamental elements.

Raw Materials and Finished Products. While it is not possible to make finely drawn distinctions in marketing problems, it is often of value to establish classifications on broad outlines. It is in this way that all commercial commodities may be grouped into two general classes. There are the raw materials of commerce and there are the finished products. Between these two and sharing the characteristics of both is another class that appears in government reports called semi-manufactured goods. Into this third class may be put all those commodities that have been partly fabricated but are on their way toward a further productive process. This group may be disregarded from the point of view assumed here, because there are no distinct problems connected with it. The discussion, therefore, will be confined to the first-mentioned general groups of raw materials and finished products.

There are similar problems connected with these two groups of commodities, but in some respects they are fairly distinct. For clearness of analysis, they are to be treated separately in spite of the fact that some duplication will arise. The endeavor will be to apply the analysis given in the preceding paragraphs to these products.

Raw Materials. These are goods that are on their way to the factory, or goods that need no special productive process. Some food products, for example, pass directly to the consumer, although they are in a raw material state. It is also true that a product may be a finished product from one point of view while it is at the same time a raw material from another point of view. An illustration of this is to be found in the feedstuffs, such as corn, hay, and ensilage, which are produced on the farm and which may be sold to the market or fed to live stock. In the former case they may be considered as ready for the market while in the latter case they must be considered as the raw materials of manufacture. Another illustration is that of pig iron, which may be a finished product for the iron man but a raw material for the steel man. Nevertheless, the same problems underlie the marketing of these commodities.

The first problem connected with raw materials is the analysis of the commodity. This means a more complete knowledge of all its characteristics in so far as they affect the commercial problems connected with it. What does it mean in this sense to know one's product? There is probably no entirely satisfactory answer to this query, even for the simplest commodity, but it includes as complete an analysis as possible of the article in all its commercial aspects. The merchant or the manufacturer should know likewise the historical development of his commodities, what improvements have been made, and why. He should study the physical characteristics of his product, the mechanical problems connected with it, the size, form, perishability, complexity, and even the possibility of technical or chemical analysis.

It has been said that automobiles and farm machinery

are making mechanical experts out of the American farmers. The merchant and manufacturer should also become greater experts in their goods. One needs to know all about the supply of the commodity, whether it is seasonal, intermittent, or steady; whether there is any uncertainty of supply. He should give critical attention to the size of units in which his commodity is handled; he should study the preparation required for making it ready for market; he should know whether this particular commodity is independent or must be connected with other commodities; that is, a group product. He will need to give careful study to the geographical location of the producing regions in order to know the characteristics of these regions and the tendency for the supply to increase or decrease; he will need to chart the volume of production for a number of years to show the tendency in output; he should compare with this also the value of the output for several years, likewise, to show the tendencies. It would be wise in addition to study the surplus or "visible supply" for a number of years, because this is a significant factor in the relationship between demand and supply. This method of analysis can be applied to every kind of commodity, no matter what its consistency or to what kind of market it may be going. In other words, the analysis of the commodity is a fundamental element in business analysis.

One cannot know the product which he handles thoroughly unless he is fully acquainted with the market demand for it. It follows, therefore, that the analysis must extend to the market. Where and what is this market? The answer to this query should discover the geographical boundaries, the climatic influences, the seasonal considerations, the social groups, the historical tendencies for

the market to increase or to decrease. Here, likewise, should come a study of competition, both within and between market centers, with a careful consideration of the basis of competition, whether it is price, quality, or service. There will likewise come the question of population movements and standards of living in their relation to changing demand. Equally important is the question of financial and trade conditions. Upon what financial condition does the marketing of this commodity depend? What will be the effect of a partial or a total crop failure upon the marketing of this product? What will be the effect of a crisis or a panic? All of these considerations are essential to a thorough understanding of the market demand for any commodity. It may be that the character of the commodity will change the emphasis in the analysis, but it is claimed that these principles are fundamental in the investigation of marketing problems.

The third general consideration is the trade organization, or the distributive machinery for carrying the goods to the consumer. An analysis here should show the essential functions to be performed and the existing mechanisms and devices for performing them. There is, for instance, the human factor in the trade organization; that is, the middleman, whether general wholesaler, jobber, broker, commission man, retailer, or the agent. Through how many hands do one's goods pass on their way to the consumer? Is the system simple or complex? Is it, indeed, essential as it now exists? Only recently a large manufacturer of typewriters who had been using the same distributive mechanism as his competitors decided to throw the system overboard and to appeal directly to the consumer, on the basis of a reduced price. In other words, he disbanded his agent system and attempted to sell type-

writers by mail. His act was not only daring and original, but it was also a public acknowledgment that the old distributive system had cost 51% of the consumer price. The manufacturer and merchant should thus be independent of all middlemen, unless their services are essential. One can know how important these services are only by an analysis of them. It is claimed that the middleman will continue to exist only so long as his services are really economic services. What are economic services, and do all middlemen perform them? These are pertinent queries in the marketing of any kind of raw material. They are likewise fundamental elements in business analysis.

In addition to the selection of the channels of trade with which one must deal, there are numerous other factors which need investigation. There is, for instance, the question of transportation. The progressive manufacturer and merchant will want to understand this problem fully. A recent study by an expert in a large trade center revealed the most absurd practices in routing freight in use by manufacturers and merchants. Both time and money were being wasted through lack of knowledge of the transportation problem. There are also the organized markets such as the grain exchanges, cotton exchanges, and coffee exchanges, which have risen to perform certain necessary functions in the marketing of commodities. The manufacturer and merchant must look into these institutions also.

There is further the warehousing industry which needs investigation. Mercantile warehouses, bonded warehouses, specialized warehouses, such as elevators, cold storages, private stock rooms, are all parts of the marketing organization, and stand in need of detailed attention. There

is the question of inspecting, grading, and weighing the commodity marketed. With the pressure for standardizing commodities of all sorts, this function grows in importance. Only in recent years have we come to a realization of the need for scientific grading even of such staple products as cotton and wheat. In the years to come much progress will undoubtedly be made in carrying the same principles over into other commodities. There is the most important function of collecting and controlling market information. What is the machinery for gathering and publishing trade statistics? Who controls this machinery? Is the information equally accessible to all? These, likewise, are pertinent queries.

The culmination of the entire business analysis should be market prices. What are the price factors and influences connected with the given commodity? What are the prices at the source, at the local market, at the terminal market? What is the "spread"; that is, the increased charge to consumer over the prices paid to producer? What part of this goes to each member of the trade organization? Does it seem a fair return for his service? What are the methods of determining and quoting market prices? Who is in control of this machinery? Is there evidence that the market is an open competitive market? The importance of such questions as these is, of course, self-evident. Like the other suggestions for analysis, they apply to every kind of commodity and to every kind of market. Once again they are fundamental elements in business analysis.

There is the financial machinery for the trade organization. This, too, needs investigation. Such important subjects as the bill of lading, the warehouse receipt, and the newly launched trade acceptance should occupy the

critical interest of every manufacturer or merchant. What are the essential principles connected with each one of these documents? Who has the advantage in the transaction by means of them? Why have they come into use? There is also the entire field of credit to be examined. There is the question of discounts. All of these are fundamental elements in business analysis.

The suggested analysis of raw material given here is based largely upon economic functions. "Service" as used in this discussion means the same as a necessary economic function. It is possible to analyze raw materials on this basis because the whole marketing process has been very largely split up along these lines. It does not seem practicable to separate the functions from the institutions in the trade organization. For instance, there is the general mercantile warehouse. This stands in the minds of most people as a distinct institution; but it has been constructed for the purpose of performing certain definite services. These functions will best be understood by a careful examination of the institution itself.

Since the analysis that has been made here of raw materials is from the point of view of institutions and functions, throughout the entire examination of such marketing problems there are two main points to keep in mind. One of these is, "Who bears the risk at every step in the marketing process?" The second is, "Who has control of the commodity as it passes on its way to market?" The economic efficiency of the trade organization is, of course, the ultimate aim of large-scale business methods, but no combination can eliminate these items. Risk and control are the two essential points in the marketing of raw materials. All attempts at the elimination of middlemen, all plans for coöperation in marketing of products,

have been centered in these two problems. Like the other elements discussed in this connection, risk and control are fundamental to the entire marketing process.

Finished Products. The analysis of finished products from a commercial point of view can be carried much farther than in the case of raw materials. The obvious reason for this is that in the latter instance the character of the commodities is, for the most part, not within man's control. The dominating factors in farming, for instance, are said to be weather and climatic influences. Neither of these to-day will obey man's will. They are certainly beyond his control. In general it may be said that raw materials have their characteristics formed by forces uncontrolled by man. When it comes to manufactured goods, it is readily seen that their character depends upon the demand for them. It is a part of the productive process to fashion materials to suit human desires. It follows naturally, therefore, that standards are more readily fixed in finished products than in raw materials. One elementary principle of large-scale production is the establishment of standards, of uniform methods in production. This is an essential difference between raw materials and finished products so far as the analysis goes. It is also clear that market influences will be felt more quickly and to a far greater extent in manufactured products than in raw materials.

Market analysis is even more important in the case of finished products than of raw materials. It is also much more difficult. In the former case the market is the consumer demand and the consumer buys in very small quantities and buys according to his individual habits and desires. This gives rise to the perplexing problems of retailing. The marketing of raw materials escapes such

difficulties. Most of the work in market analysis for finished products to-day is centered upon a study of the market itself. Almost all the forces are concentrated on consumer demand, and the effort is to anticipate, and to guide and control this demand.

There is, of course, a trade organization connected with the marketing of finished products. Here, too, are all the factors of the trade organization as outlined above. But there are new forces in this field that are probably of dominating importance. Manufactured goods are coming to be sold more and more under brand names, trade-marks, and other methods of identification. There is also the extremely potent force of advertising in the marketing of finished products that has developed into a vast industry in recent years. All these forces of offense and defense have been struggling with tremendous energy to control the entire marketing process. This has resulted in the gigantic battle between the big manufacturers, the big jobbers, and the big retailers. Here arise also the problems of the department store, the chain store, the mail-order house, the manufacturer's branch, and the coöperative store. Here, too, is the attempt to pass by all these and appeal to the consumer directly. What are the elements of success in these different devices? What is there in them that is of essential importance? Which one will survive, and why? What new forms of trade organization will evolve from this struggle? These are general and fundamental inquiries.

It may be seen from this analysis that there are the same three general, fundamental, but obvious, problems connected with the marketing of finished products that were discovered in the marketing of raw materials. In this field, too, there are certain questions of prime impor-

tance. One of these is the price problem. This subject is shot through and through with business tradition. Take the giving of discounts, for an example. How many merchants or manufacturers have really analyzed this problem? What is the fundamental basis of discounts? Are discounts really essential in modern business? Why? What does the discount system cost? What is the proper per cent and what is the proper length of time for discounts? In other words, what is the philosophy of business discounts?

Involved in this question of price there is also the credit problem. Almost a complete science may be developed on this subject. It has its fundamental laws and principles that are essential to success and that must inevitably prevail in the course of time. What is the essential duty of the credit man? What is to be his relation to the business organization? What his training, his powers, his methods? What is the relation of the commodity and its market and its trade organization to the credit problem? Credit that is to be safely offered must be based upon sound business principles, that are nothing more or less than a proper application of the discoveries of commercial research.

Another part of the price problem is maintained or fixed price. This, too, is fundamental and far-reaching in the marketing of finished products. Here, again, there is evidence of the struggle to control the consumer market or rather to control goods until they reach the hands of the consumer. This fixed or maintained price is not a simple or even a single problem. With it are combined all the complex problems of branded goods, of trade-marks, of advertising, of market control, of legal rights and commercial rights, of long-run policies, and of business ethics.

These elements permeate the entire marketing problem; they are not confined to any single commodity or any group of commodities. They are, therefore, in every sense fundamental.

Another phase of this entire subject is the question of dealer influence. The strategic point in marketing finished products is the crucial moment of sale. When the consumer gives or refuses to give his consent, who holds the dominating influence — the manufacturer, the merchant, or the consumer? Popular advertising seeks to make the consumer independent of the dealer. He goes to the store with his mind made up as to the brand of goods he will buy and the price he will pay. But in some cases the dealer becomes an expert whose advice in the purchase is sought by the consumer. There are those who argue that the retailer dominates the situation at this important moment. Some say it is the will of the consumer that prevails. Others claim that the tremendous, almost irresistible, force of national advertising stimulates the desires and directs the will of the consumer. What is the truth of the matter? This query, also, runs to the very essence of the marketing problem.

There is the further problem of the new type of retailer. Business men have only begun to study the rise of the department store in order to find out what points of strength it has and what its weaknesses are. Fundamentally the department store is seeking the advantages of large-scale buying and large-scale selling. This is in line with the development of machine industry in production, with the rise of big business and corporate forms of organization. Will this new type of retailer be able to supplant the regular retailer? Will he be able to combine within himself many of the marketing functions, such as whole-

salings, financing, storing, and retailing? Will merchandising become more and more centralized in such institutions as the department store? Must this type of retail establishment be confined to certain kinds of commodities, or is it without limit as to the quantity and character of the product which it can handle? Where, after all, does it fit into the scheme of things? These are queries which investigation must answer, and they, too, are fundamentally important.

The chain store is another new type of retailer that has had a most remarkable development in recent years. The principle upon which it is based is to secure all the advantages of large-scale buying together with all the advantages of small-scale selling. The chain system may do its own wholesaling, it may even reach back to the source of its raw materials and own or control factories. It is able to establish retail stores at the most convenient points for the consumer, and it may be able to maintain personal contact with him. Does this type of retailer show certain advantages over the department store, which will enable it to displace that organization? What are its weaknesses and its elements of strength? What about the future trade organization, if the chain store continues to develop as it has developed in recent years? These, too, are queries which cause great concern among the old type of retailers, for there is brought into business a new kind of force which must be reckoned with.

The power of the mail-order house is well known and is generally feared, especially in rural communities. Like the chain store, it has had a remarkable growth in recent years. It differs in principle from the department store and the chain store in that it seeks to concentrate and to integrate the entire business process. Like the depart-

ment store, it concentrates under one organization and in one locality the wholesaling and retailing. Like the chain store, it desires to keep personal contact with the consumer and is willing to sell in small lots to a wide market. It, too, has combined with retailing the function of wholesaling and to some extent the process of manufacturing. What is the future of this type of wholesaler? Is there any limit to the character of commodities which it may handle? Will it finally dominate in all the rural markets? Will it make inroads into the great trade centers? What are its weaknesses and what are its elements of strength? At the head of these great marketing institutions are clever and progressive merchants who are devoting all their skill and all their cleverness to the development of these new methods of doing business. What is to be the effect of this new force upon the existing system of marketing finished products? There can be no question of the widespread importance of such inquiry.

These three types of retailer probably combine all the elements of the marketing problem. There have been attempts to establish the manufacturer's branch stores, but this is only a modification of the chain store. There have been attempts at coöperation, but for the most part these have been limited to small communities or to the marketing of food products. The real struggle is between the large retailers designated here as the new types of retailer.

There is another side to the marketing problem which is being emphasized more and more in late years. The manufacturer has for a long time recognized the tremendous importance of his labor problem. The selection and training of his workmen have been a burden on his soul. But it is being recognized more and more clearly to-day that the merchant also has his labor problem. Only a mail-

order house can dispense with a sales force. The problem, therefore, of selecting, training, and organizing the sales force both within the store and in the field is a very general one. With the merchant there is the task of selecting men to go out and represent his business to the world. Salesmen have great power to make or to mar one's business. They are the personal representatives of that business wherever they go. Quite apart, then, from the human element of personal contact with the consumer, the merchant must also contend with the human element of the temperamental sales force both within and without his establishment.

And even a catalogue house must reach its prospective customers through some kind of medium. The sales-letter problem and the catalogue-making problem require a mastery of business English beyond that needed in almost any other line. It is nevertheless true that all forms of business have a correspondence problem. What are the principles of business-letter writing? How can one be sure beforehand that his sales letter will be successful? Surely the basis for success here, as elsewhere, is to be found in the analysis proposed above; that is, in a knowledge of the commodity, a knowledge of the market, and a thorough understanding of the trade organization.

In one form or another, these are the problems every business man will meet. How can he know his business well enough to solve them? That is the main issue. It may well be that the answer is: He cannot do it for himself. An expert may be required. But every one can do far more than he is doing to-day by a careful and comprehensive study of his problems. The first step toward getting the material out of which the solution for most of these problems is to come may be taken by any intelligent

manufacturer or merchant. It means simply the keeping of intelligible records and the collection, analyzing, and interpretation of pertinent and essential facts.

Herein may be illustrated the dividing line between the general principle and the unique problem of each business. The law, the rule, the principle is general. The facts are unique, are individual. It is, of course, the most difficult problem of all to see the general rule behind the unique facts. Useless records are only a burden and clog up the shelves. Facts to be useful must be collected for a purpose, and that purpose should be the solution of some of the fundamental problems indicated above. Suppose it is the first-mentioned problem — the analysis of the commodity. Much may be learned from the historical records of its development, the source of its raw materials, their abundance or scarcity, their treatment in manufacturing, the skill, the art, the care in its workmanship, the improvement in form or texture, and all the reasons therefor. Such a background will enable the manufacturer or merchant to take up his problem philosophically for the analysis of its relation to human wants. After all, every great, successful business man must be a philosopher. Business philosophy is nothing more than the application of general principles to individual and concrete problems. This is the ultimate goal of business research.

The stories of romantic success in business have oftentimes developed from such analysis as has been suggested here. Take, for example, the great automobile industry. There was, as many men knew, a widespread demand for a horseless vehicle. This vehicle must displace the wagon and the carriage and therefore must be able to fulfill the uses of these conveyances. The organization for selling such a commodity already existed in the handling of car-

riages, wagons, bicycles, and so forth. Even a superficial analysis would show, therefore, that the essential problem was a mechanical one. The first thing needed was a dependable machine that would actually run. Until this need was met, the industry was at a standstill. The history of the automobile will show that immediately upon the solution of this mechanical problem began its marvelous growth.

The very same thing is true of the farm tractor. Industry in the cities drew from the farms the labor force, leaving a vacuum to be filled by machines. There was the obvious demand, there was the existing trade organization, the commodity awaited only the solution of a mechanical problem. Another instance is the case of the hot-water bottles. These commodities of American make are said to have invaded the British market in spite of the fact that Great Britain manufactures them herself in great quantities. Why? The explanation given is that American ingenuity devised one added convenience which met a very distinct and widespread need and enabled the American manufacturer to sell in the British market. British and American hot-water bottles were made of the same material, they were of the same shape, and had the same kind of stopper, but the American bottle was fitted up with a ring in the bottle which enabled one to hang up the hot-water bottle on a hook so that it quickly dried. This was the Yankee touch. The consumer recognized this added convenience and bought the American bottle.

Classifying Commodities. If the principle is sound that the character of the trade organization depends upon the character of the commodity and the nature of the demand for it, it may well follow that a study of the relationship between a commodity and its demand is the most funda-

mental investigation that can be made. In this case it is necessary to find some kind of classification of commodities in relation to the demand for them in order that one may study more intelligently the essential character of the organization. Most classifications are rather vague and indefinite in character. Some goods are said to be staple commodities. Illustrations of this type are wheat, cotton, wool, sugar, flour, meat, and so on. When one examines the qualities of these goods, he finds they are of very different kinds. What is there common in the group which enables one to put them in the same class? Some obvious things they have in common. They are, for example, established in the market. The demand for them is everywhere. No standard of living is too low to include them as necessary of life. This one quality may be enough to classify them as staples, but beyond this it is true that they have accepted standards of grading which every one is supposed to know or can apply. In any case, these are the types and these are the qualities of the goods called staples. The essential commercial factor in connection with them is that since everybody must have them, it is price that counts.

In the line of food products another class of goods is called the fancy products. There is, for example, the fancy grocery store that handles the less common goods. These are higher in price and are bought by exceptional purchasers or by ordinary purchasers on extraordinary occasions. In this case quality of the product begins to dominate the price. There is a social distinction in being able to buy these goods and for this distinction people are willing to pay the price without question. Exotic fruits, extra-price teas, foodstuffs imported from far away, are examples of this class of commodity.

There is another class of goods on this same basis called the specialties. This is confined to a narrower group of consumers with whom price is a very small consideration. They will have what they want regardless of the cost, and dealers in goods of this kind are constantly catering to the whims and desires of those who have much money to spend. Very rare articles in the food line or in style goods would belong to this group.

On the basis of this classification one may consider the trade organization that has grown up to handle these goods. Staple commodities are not, and cannot, be concentrated within a trade center. They are carried by the thousands of small retailers located in rural districts, in the outskirts of the city, in the secondary markets and suburbs of the large trading centers. Old-line retailers handle these commodities in the old-fashioned way. In fancy goods and in specialty goods it will be found that the trade is concentrated. There are only a few stores, and these are in the center of the shopping district. There is usually no bargaining, and the purchaser does not ask to see more than one line of goods for the sake of comparing prices and quality. The fancy grocery store, for example, is in the very midst of the shopping center along with other high-priced goods. There is quite a distinct tendency in the handling of fancies or specialties toward monopoly. This is not true and cannot be true of staple goods. The manufacturer of a breakfast food, for instance, demands that his product shall go to the old type of retailer because he must have thousands of stores conveniently located throughout all parts of the country that handle his commodity. It may be thus seen that even on such a general vague basis for classification as this, the different types of trade organization have grown up.

From another point of view commodities, particularly manufactured goods that are for individual consumption, fall likewise into three general classes. There are, first, the emergency goods. These are goods that are demanded suddenly and unexpectedly. They are best illustrated by the supplies carried in the drug store. Under modern city conditions some groceries may be classed here as, for instance, milk, or bread, or butter, when sudden demand for them arises.

Another type of goods on this basis of classification is called convenience goods. These are articles of daily purchase that are relatively insignificant in value and are for immediate use. Under this class would fall such goods as notions, candies, groceries, children's stockings, house dresses, and so on. These commodities are bought at the most convenient place. There is practically no element of style connected with them. They are bought for service, not for distinction. Where there is any comparison of values, it is on the basis of durable quality and substantial workmanship.

The third class of goods from this point of view is called the shopping line. These are the more important goods for the household or for individual use. They are bought only at intervals, perhaps only once or twice a year, or possibly only once or twice in a lifetime. These purchases require considerable thought on the part of the consumer. They may be delayed for some time until a more convenient opportunity arrives. Usually such purchases mean a considerable item of expense in the family budget. Into this class would fall such goods as furniture, rugs, suits, dress goods, and so on.

There is some evidence to show that each of these classes of goods has developed its own means of distribution and

has developed to a great extent the location of its distributing plants in direct relation to the demand of the consumer. "Woman is a shopper," says one writer on this subject, "hence the department store." This means that the department store has for its foundation a shopping line of goods. It is generally claimed to-day that this new type of retailer grew out of the textile business. It is this line of shopping goods, therefore, that accounts for the department store, determines its character, and directs its development. The merchant or manufacturer who is engaged in business investigation should examine carefully the foundations upon which such claims are based. If the department store demands for its successful existence a shopping line of goods, does this fact likewise limit the character of goods that may be handled by such a store? There is, for instance, the grocery department in many of the large department stores. Can these be permanently successful? Could cigars be sold successfully by a department store? Neither of these commodities are to be classed as a shopping line.

Emergency goods must be carried so near the consumer that he may instantly turn to them in time of crisis, confidently expecting to find there what his case demands. The type of trade organization represented by the drug store has risen in answer to this need. One expects to find a drug store on the most conspicuous corners of the streets; he expects it to be open for long hours; he also expects that it be permanently lighted and identified in some way so that it may not be mistaken. On the other hand, the question naturally arises: Is the drug store limited in the character of goods which it may handle? Must its entire stock consist of emergency goods? When one considers the countless variety of commodities found

in the modern drug store, he will, of course, doubt the existence of any limitation. This question, however, demands careful attention from the manufacturer and the merchant. It may be that there is a fundamental and a determining economic principle involved in this classification.

Goods of the convenience type, as the name implies, must be carried by those retail establishments which find their location at the place that is most convenient for the consumer. Scattered through the residence district of the larger cities will be found these stores filled with convenience goods. The 5¢ and 10¢ stores, notions and novelty stores, the hardware stores, the cigar stores and the grocery stores give evidence of the fact that there is a principle at work in this case. Again the question arises: Must these stores be confined to convenience goods? Can they not develop other lines so that shopping goods are carried under the same roof with convenience and emergency goods? How far this principle, if it is a true economic principle, limits the activities of the merchant, is a question for critical study on his part.

Scientific Analysis. Much aid will certainly be derived in the near future from the movement for industrial and commercial research. Accurate business facts will tend immediately to modify or to establish these fundamental principles of business analysis. A further inquiry into the essential character of goods will afford a sounder basis for judging them commercially. There is yet a vast field that is undeveloped in the study of commodities in their relationship to human wants. Heretofore business tradition has been dominant in this field. It is believed that much good will be derived from military needs by the business man. A single illustration will prove this point.

In spite of the clever words of the great Napoleon, it still remains true as an actual fact that an army marches on its feet. For a long time it has been recognized in a general way that the soldiers must be cared for in this regard. In the United States, however, no considerable movement has gained headway to take up this matter in any careful or scientific manner. Only very recently the government decided to make an investigation into this subject. "A series of studies of soldiers' feet and the proper fitting of shoes has just been completed by a staff of officers, enlisted men, expert shoe men, and military orthopedists, under the direction of the Quartermaster General and the Surgeon General. The experiments and tests which covered a period of many months and a number of camps and cantonments were thorough and complete and resulted in changes and improvements that will mean added comfort and marching power to the army." (*The Official Bulletin.*)

Careful tests of this kind have revealed the fact that two out of every one thousand men have had to have their shoes made to order. Results have also made it necessary to change the style and size of the shoe worn in the army. Formerly the standard shoe was called a 7-E, but the special tests revealed the fact that the average size of the marching shoes should be 8½-D, while the average size of the field shoes should be 9-E. Other tests of similar character seemed to show that the men in the present army are larger than those serving in previous wars. The records in the Quartermaster General's office show that requirements average about a full size larger in all outer clothing worn by the soldiers. Records of this sort should be made available to the merchant and should prove of great practical value to him. It may be hoped that a by-

product of the present war may be a more scientific adjustment of commodities to human needs.

Conclusion. This discussion has aimed to survey briefly some fundamental principles which should guide in the making of any kind of business analysis. With an increased knowledge of facts, these generalizations may be modified from time to time, but it is believed that in essence they are true. In any case, they should prove helpful as guides or laboratory directions in beginning the work of commercial research. They should not be accepted, of course, without careful examination, and they should be constantly tested by the facts secured. Nevertheless, in all careful experimenting, it is necessary to begin with some kind of hypothesis. Let the principles stated here serve as the hypothesis in business research.

CHAPTER XII

THE NEW BUSINESS

War business — Business changes — Persistent phases of business — A new spirit — Centralization of control — Standards of business — The emotional appeal — The expanded horizon — Mobilized labor — Mobilized industry — New legislation — New aims of organization — The corporation — Better organization — Control of essential resources — Socialization of industry — Productive capacity of a people — More intelligent business — Conclusion.

There are indications on every hand that, in political, social, and business life we are now living in a period of transition. Many new forces have been unleashed and are at work to modify in a more or less fundamental way the entire structure of modern society. In an address to a group of business leaders, a few years ago, the President of the United States said: "We are in the presence of a new organization of society. Our life has broken away from the past. The life of America is not the life that it was ten years ago. We have changed our economic conditions absolutely from top to bottom, and with our economic society, the organization of our life." (*The New Freedom*; p. 3.)

These significant words were spoken prior to the epoch-making events of 1914-1918. All the forces for change that were then seen at work have been greatly intensified under drastic pressure. Social problems, political problems, economic problems, in forms old and new, are still demanding immediate solution. To-day, the settlements that business men have postponed to a more convenient

season will no longer be deferred; they must be met; they must be met honestly and frankly, and they must be settled satisfactorily.

In the making of these settlements, in the solving of these problems, new adjustments will be required. It is out of these readjustments that the new business will arise. What will be the character of this new business? In what fundamental respects will it differ from the business of yesterday?

War Business. In the years preceding 1915 there was every indication in the business circles of the United States that the country was headed for a period of depression. For two years and more wheels of industry had been slowing down. Profits were greatly decreased and unemployment was on the increase. Manufacturers kept their plants going only in order to meet heavy overhead expenses. Merchants struggled to move the goods from their shelves. Everywhere there was business discouragement and business gloom.

Into the midst of this situation came the overwhelming force of a war demand. Foodstuffs, war materials, munitions were demanded in constantly increasing amounts. Foreign markets that had been satisfied with European goods found their supply suddenly cut off. They turned to the United States for help and added theirs to the war demand for American goods. In a brief time the entire tone of business was changed. Pessimists became optimists. Factories reopened and increased their pay roll; orders piled in upon them; unemployment decreased; purchasing power among the great mass of consumers increased. Merchants felt the stimulation of business. Goods moved from their shelves with accelerating speed. Our foreign trade reached heights undreamed of before.

The United States passed from the rôle of a debtor nation and joined the ranks of the great creditor nations. All signs of a business depression vanished. American business came under the control of a stimulating war demand.

In 1917 the United States joined the other great nations of the world in the war. There came immediately a warning to all people that they must save. As early as February of that year government reports indicated a shortage of certain foodstuffs. They asked that a stringent regulation for the purpose of conserving foodstuffs should begin at once. Everywhere the cry was "Save!" For the first time the people of the United States felt a great new fear, the fear of want. In newspapers, in government reports, in advertisements, in public addresses, and by word of mouth the propaganda for conservation spread throughout the country. The effect of this movement was felt almost immediately. People ceased to buy as they had been buying; goods did not move as rapidly from the shelves; merchants delayed sending in orders to jobbers and manufacturers. These latter, in their turn, demanded fewer goods and less raw materials. The entire organization of business received a tremendous shock.

Then came a reaction. The philosophy of the business man began to be preached by all; — that business must go on; there must be "business as usual." Profit, that sensitive spot in all business, had been touched by the saving propaganda. The country could not endure a return of depression, stagnation, and unemployment. Somehow, some way, by force of will, business must go on. The propaganda was reversed. The consumer was urged to buy as he was accustomed to buy.

But business could not be as usual. It is an obvious fact that business cannot go on as usual unless demand

and supply continue as usual. In this case demand was unusual; it was hectic; business was feverish in consequence. Purchases were necessarily concentrated along certain definite lines. The whole movement for mobilizing industry and labor was beginning to take shape. Gradually there arose a distinction between one industry and another; between one kind of business and another; men began to speak of "essential" and "nonessential" industries. The whole business system was wrenched and twisted by this unnatural strain upon it. It was impossible that business should go on as usual.

There then arose the question of price fixing. In times of unusual business strain and turmoil, where demands are concentrated and prices fluctuate violently, there is a constant temptation to speculate. In times of war a great field of speculation is in foodstuffs. In order to suppress such a movement in the United States, the government formed a Food Administration and gave to it the power of fixing the price, wholesale and retail, for certain essential foodstuffs. For wheat there was established a minimum price, and, as a device for controlling the price of this commodity, the government formed a business corporation with a capitalization of \$150,000,000,¹ whose duty it was to buy and sell wheat for the purpose of regulating the price and thereby preventing speculation. A meat commission began its work to control the price of meat; the Fuel Administration took up the question of coal prices; special commissions were appointed to inquire into cost of production and distribution of other foodstuffs such as milk, sugar, flour, etc. Government control was thus extended in a way never experienced before in the

¹ Since increased by direction of the President to \$500,000,000.

United States. Many mistakes were made because of inexperience and lack of knowledge and foresight. The price of finished products was sometimes fixed while the raw materials were left free. The control of one commodity immediately affected all allied commodities. Through all these new experiences business continued, somewhat uncertain, but, in general, prosperous.

This was the beginning of war business. What the President of the United States had prophesied four or five years before was now coming to pass under circumstances which he could not have foreseen. Changes that would require years to accomplish under normal conditions were produced by the war influence overnight. So-called radical and socialistic principles were put into practice without much debate and without serious controversy. Here and there arose sharp, brief disputes on certain points, but for the most part these were brushed aside by the national demand for effective control to accomplish a common purpose. With the breaking up of old habits of business, with the introduction of new and untried forces, it is inevitable that great changes will appear in business. In ways that the business prophets of the pre-war period never suspected, these years will prove to be transitional years.

Business Changes. The most important and significant changes in the character of American business will be brought together here for the purpose of analyzing them in order that a fuller appreciation may be had of their tendencies. The constant task of the practical business man is to foresee changes and to prepare his affairs to meet them. There is also for him a constant danger of becoming immersed in details and failing to get the broader view. It is likely that many changes are too recent to be

accurately evaluated at present; nevertheless a consideration of them will prove helpful.

Among the most obvious new forces in business, there is the extension of government control. By means of new types of organization, such as the Food Administration, the War Industries Board, the War Trade Board, and by giving increased power to other departments and officials, the United States Government has entered into business control in an entirely new fashion. A very short time ago governmental control and operation of the railroads was mere talk. The taking over and operating by the government of telephones, telegraphs, and cables was not expected by the present generation. Building, owning, and operating ships were assumed to be matters for private business activity, and yet the government has done them all.

Attached to all of these changes, to be sure, has been the phrase "for the period of the war"; but business men are not convinced that the old status will or can return. Many of them found themselves caught in the dilemma of greatly desiring effective, centralized control in order to carry on the war to a speedy, successful conclusion and of greatly fearing that this very success would tend to perpetuate government control. Released from the dilemma by the happy ending of the struggle, they have reacted strongly against governmental restraints. It seems probable that here, as in all doubtful issues, the result will be a compromise.

Other new phases of business are numerous. Costs of production have been examined in a way not known before. Profits in business have been limited in an entirely new fashion. Prices have been "suggested" by government officials with a force never experienced by the business man

before. Industry after industry has been taken over for direct governmental control in carrying on the war; commercial relationships have been modified so as to reduce competition to a minimum; stocks of raw materials have been limited in drastic fashion; all labor has been controlled in a new way and for a common purpose. These are some of the most obvious outward changes in business conditions.

Deeper and more fundamental changes have taken place, which are partly economic but largely psychological. All readjustments start from a new idea, a new experience, a new mental attitude. Crises, depressions, booms, panics, like social revolutions, are composed to a great extent of the stuff that dreams are made of — ideas, suggestions, rumors that run from lip to lip and are nurtured in the minds of the multitude. It is not possible, for instance, to estimate the economic effect of an unprecedented increase in wages. The sense of greater power, the feeling of enhanced worth, of greater well-being, of relief from the fear of want, will go deep into the essence of social, political, and economic society.

There are, too, the after-effects of international coöperation. Americans have associated in common tasks with foreign peoples. They have matched their wits with the veterans of Europe in strategy, finance, and bargaining. American business methods have met European methods. There has been the give and take, the thrust and parry that is characteristic of every contest. Business men of America have had to ask and to give. In the years to come these actions will grow into heroic proportions, though in actuality the human element — to give it no worse name — has been rather too strong for unmixed admiration. The fact is that American business has learned, and has

taught others. Here, too, are effects of practical issue.

Some of these forces are sapping at the very foundation of modern economic structure. Two of the corner stones of that structure are contract and private property. With more freedom than ever before men are expressing their doubts as to the sacredness of both of these. This may possibly be a passing phase, the result of seeing and being party to the disregard of these things under the overtowering demands of war. The attitude, however, is here and is to be reckoned with.

American business is now international. Manufacturers and merchants are forced to think in terms of the world market. That artificial barrier, a political boundary, cannot stop the demands of trade. A vacuum in the foreign markets has irresistibly drawn upon the raw materials and the manufactured goods of the United States. The work of the Bureau of Foreign and Domestic Commerce, of the Chamber of Commerce of the United States, and of the National Foreign Trade Council is being rewarded in ways unsuspected and to an extent never hoped for. Here are new fields to enter, such as the Orient and South America; here are new customers to study, new tastes to please, new methods of doing business to learn. Domestic trade must inevitably feel the effects of an expansion in foreign trade.

How fundamental these changes are to become, how far we are to go in them, what new methods of control may be used, depend upon the new adjustments from the strain of war. Nobody to-day knows. There is no method to anticipate them. Every indication exists, however, to show that there will be a new business. There always is a new business after an abnormal period.

Persistent Phases of Business. The history of business

in every country shows a thorny path. Periods of prosperity react with periods of depression. Under both of these circumstances many changes have occurred. And yet, despite all these fluctuations, certain fundamental elements have persisted. In one respect business is like the waves of the sea; the water rises and falls in forming these waves, but does not move forward. The impulse, the force creating the waves, goes on and the water sinks back in much the same position it held before. In most outward aspects business presents the same kind of phenomenon.

Unless the changes that have appeared so far are greatly intensified and unless there are some new forces to appear, it may be safely predicted that certain phases of business will persist. Like social habits and political institutions, business organizations and systems cannot be suddenly and completely transformed. Take the price system, for example. All of our business is organized around this principle. Everything has its price, and the business man thinks in terms of price. Business is guided by means of a price system. There is not yet any indication that this system will be greatly changed or will be discarded altogether. New uses may be made of the system, new forces may find expression through it, but as a system it will continue to be.

It seems also very probable that the machine industry, as it is called, will persist. Indeed, the present indication is that this kind of industry will be greatly increased. Machines are moving to the farms to take the place of hand labor there. Under the general shortage of workmen, new kinds of machines will be invented. The war has been called by one great manufacturer, "a war of machines." It is probably true that the after-the-war busi-

ness will be in a new and fuller sense a machine business.

Another characteristic of business that seems likely to remain is specialization. There is no indication to-day that the world is returning to the so-called primitive condition before the time of specialized intelligence. On the contrary, there is every reason to believe that this characteristic of business will become more important. The new demand on business is for the specialist who can apply scientific principles in certain highly technical and highly specialized fields of endeavor.

There is also money as a medium of exchange, as the basis of calculation, as a means of accumulating capital, which seems likely to persist. There may, indeed, be new standards of money, there may come about a realization of an international standard. Credit may be greatly increased, and yet there is no evidence to show that this characteristic will disappear from business.

There are many other phases of modern business which might be mentioned; there is the element of contract which runs through all business relationships to-day; there is the question of labor which in some forms seems likely to persist. There is every reason to believe, moreover, that business will continue to run on the basis of profits, that the business man will continue to do what pays best, however he may interpret the word "pays." It may be said in general that without a thorough breakdown of all the industrial and commercial system, business in its outward aspects will "carry on."

It might be hoped that the new business would mean an elimination of the indefensible and almost tragic waste of American business. This hope, however, is altogether too idealistic. There will doubtless continue to be the uneconomical location of factories, of stores, of warehouses, of

an entire railroad system, and there will be the continued struggle of these institutions to maintain themselves. The great body of business men are too set in their ways to change greatly. It requires two or three generations to bring about any revolution in business habits. He will be an optimist, indeed, who believes that, like the fabled Phœnix, a new business will spring full-formed from the ashes of the old.

A New Spirit. Permanent changes in business must come slowly, but come they will. One can find to-day evidence of a new sort of union among business men. It may be merely one phase of what passes under the name of "coöperation." As a matter of fact, it is growing into a new sense of appreciation of duty and responsibility. There is in reality the forming of a new conception of business relationships. This goes beyond the old idea of coöperation. It is fostered by the great trade associations with their trade papers that have multiplied so fast in late years. It appears also in the growing new attitude toward government and in the evidence of a new government attitude toward business. Both of these will learn a great and useful lesson from their present contact.

Just as democracy was the slogan of the European struggle, so the new spirit of business after the war must be a spirit of democracy. "Our industrial organization," says Mr. Guggenheim, "must be democratized." (J. R. Smith; "Industrial Management," p. 271.) The same idea has been expressed by one of the great labor leaders. This period of trial should bring these two parties together on some common basis of democratic policy. It is hoped and it is believed that this will prove true.

The lack of democracy in business is not confined to the large factories. It has been a common element in all kinds

of business. The autocrat has been in the office as well as in the shop. He is no less dictatorial in one place than in the other. All of this must pass away. There must appear in its place what has been called "the representative system in business." "To the student of marketing, indeed, the whole foundation of merchandising is being affected by this change from a purely disciplinary system to a partly representative one." (Harry Tipper, "The New Business," p. 331.) Evidence of this change may be seen in such gatherings as the Saturday-morning meetings of salesmen in the home office, in the round-table discussions in various types of business, in the rapid development of welfare work among employees, in the movement for arbitration of all kinds of disputes.

The essential element of change in business seems to be one of spirit rather than form. It is a new attitude of mind. It may well find expression through old forms of organization and yet it may effect a complete transformation. One part at least of this new spirit is a desire for more knowledge. Business must become more intelligent. The management itself must be trained in foresight, in sympathy, in a general knowledge of its own affairs. The spirit of research is joined with the new spirit in business.

Centralization of Control. There is every reason to believe that, in spite of the fact that all extension of government control over industry is qualified by "for the period of the war," there will be a permanent extension of this kind of control. The railroad systems that have been built up on an individualistic basis are becoming so thoroughly "scrambled" that it will never be possible again to readjust them completely. The machinery that is being set up for greater control over market information will not likely be scrapped with the coming of peace. The

facts gained by a study of costs in certain great industries will undoubtedly form the basis of the more detailed supervision over these industries. The encouragement of foreign trade by the passage of legislation friendly to the forming of combinations will not be withdrawn. Business men will be educated to expecting and to accepting a curtailment of their former individual business liberties, for greater and better liberties of industrial and commercial groups.

In this relationship between business and government will also appear the influence of the new spirit. It is believed that the business man on his part will have greater confidence in the government and will, therefore, be in a more friendly attitude. On the part of the government, too, there will be a change in policy. Experts have been drawn into public service for the meeting of the emergency demand, but it seems probable that these experts will never again return to their former status. New kinds of training and skill will be employed by the government to secure more intelligent direction and more cordial coöperation between itself and business men. Herein will lie one of the great and significant changes that will distinguish the new business from the old. What the President of the United States had predicted years before will be brought about by unexpected means.

Standards of Business. One of the cardinal principles in industrial research has been an insistence upon standard practice and standard forms. For increased production it is felt to be necessary to reduce all processes to a single, set, stereotyped process. In a remarkable manner business is being standardized. The government has greatly aided in this movement by its demanding from various industries an intimate coöperation in the con-

struction of war materials. Speed of production demanded simple and standard methods. The Liberty Motor was quickly standardized, the types of aeroplane, of machine gun, of motor truck were all reduced to standard patterns. It became possible for various factories in different sections of the country to make parts of these machines and have them assembled at some other spot, so that each one could devote its entire capacity to large-scale production.

The same principle is being carried over into commercial practices. In the more difficult matters of consumer demand, there is a similar movement for standardization. Take the example of style goods. There was an evident movement for reducing the number of styles in clothing and in shoes for conservation purposes. The government issued very definite orders in regard to this matter. How far it would have been carried depended directly upon the continuance of the struggle. When, however, this war ended so suddenly, the influence of the movement was not lost. There is a great probability that standard methods inside the factory and in general business will become a permanent element in the United States. This, too, will be a characteristic of the new business.

The Emotional Appeal. One characteristic of business in time of war that distinguishes it sharply from normal peace-time business is an increased element of emotionalism. The new kinds of appeal are on a different basis. There was the spirit of sacrifice, of self-denial, that was affecting business relationships. The patriotic appeal also had its effect. In spite of profiteers and men of small caliber and mean dispositions, who take advantage of the situation always, there was a great movement throughout the country for placing public welfare above private gain.

This will, to some extent, be a part of the new business attitude. Men are compelled to-day to think more in terms of the whole nation than in the terms of their individual business.

Connected with this new element of emotion in business affairs, there is the effect upon leaders in business, of going to the capitol of the United States and assisting in mobilizing the great industrial and commercial forces of the country. Probably never before had they been faced with such great and complex problems of control. They had doubtless never been compelled to look at problems from so many different angles, to weigh and consider so many conflicting interests. Such an experience must inevitably broaden the mind and make the judgment more generous. It is in reality compelling the business leaders of the country to think nationally as they have never thought before. It is a significant fact when one great business leader publicly confesses that his hand trembles as he picks up the morning paper. This means that he is appealed to in a new way; his emotions are stirred to new depths, and he is not likely soon to forget such profound experiences. As to-day he finds it necessary to manage his business under the influence of such emotions, so he will continue in the later period to look at business problems from much the same point of view.

This is an intangible factor and is difficult to evaluate. It is, nevertheless, a real influence and it seems likely to become a permanent one. The old saying that "business is business," that all personal relationships must be set aside in such transactions will no longer have the force that it has had in former years. This, too, will be a part of the new business spirit and it will help in transforming business practice and business policies.

The Expanded Horizon. In his own eyes the American is an admirable type of individual. To him the United States is "God's Own Country." He is proud of his independence, his lack of conformity to social requirements, his crude individualism, and his general defiance of conventions. The attitude of the European toward him has been different. He has been called crude, provincial, narrow-minded, and prone to devote all his efforts to making money. One must confess that there is strong evidence of the American business man being narrow and provincial in his point of view. He has never cared for entering foreign markets because he has felt that his own market was best. He has never given serious attention to the character of commodities made in other countries because he has stubbornly insisted that his own manufacture is superior. This attitude must be wholly changed when the new business comes.

For the new attitude of mind a new phrase has been coined. It is said that the progressive man of to-morrow must be able to "think internationally." This will mean that his horizon will be greatly extended; that he will be able to look beyond his own narrow market into foreign fields; that he will begin to study the products and methods of his foreign competitors. In response to this new attitude the daily papers and business magazines will carry far more world news than before. A writer of vivid imagination has recently described the situation that is hoped for when this expanded horizon becomes a reality.

"Will it be strange to hear, in the gossip of Wall Street and finance, quotations on Argentine Rails, Russian Industrials, Chinese Oils and Coals bandied about as familiarly as Steel, Union Pacific, General Motors?

Will one inquire why his banker is found reading more

cables from Buenos Aires, Peking, and Shanghai, Bombay and Petrograd, along with full dispatches from his London, Paris, and Berlin branches? Will it be surprising to find local murder stories crowded off the front pages of newspapers by dispatches about American successes in new foreign lands? In public gatherings, clubs, political party councils, will there not be new interests centered in the groups of men returned from distant lands, alive to our big opportunity, our bigger responsibility abroad, through their man-to-man contact with other races?" (Lewis D. Froelich, quoted in C. B. Knoeppel, "Industrial Preparedness," p. 145.)

Mobilized Labor. It does not seem possible that the labor question can return wholly to its old-time unsatisfactory condition. There have been new appeals to the laboring man, and new appreciation is now had of his importance and his position. For a common purpose, men trained in many kinds of work have been brought together from all parts of the country. Under the pressure of circumstances employers and employees have met on new terms. With the arrival of new business, labor will be found to have been mobilized in a way unknown before. There will probably also be established a definite national labor policy of which the country has been in such great need.

This, too, will be a part of the new spirit of business. It may be that the labor problem will not seem so ominous under these new conditions. Possibly misunderstanding has been the great obstacle to its solution. In any case, the machinery will have been prepared by means of which intercourse between employer and employee will be made far easier. The continued settlement of disputes by arbitration, the open and frank hearing of both sides of the case, the introduction of democratic policies, will undoubtedly have their lasting effect. In the field of labor,

so important to industry and commerce, there will be a new spirit.

Mobilized Industry. In a way never experienced before by the business man of the country, all essential industrial activities have been concentrated for a single, common purpose. National demand has taken the place of individual demand, and national interests have supplanted private, individual interests. Investigations have been made into the productive capacity of various plants throughout the United States, and this united capacity has been carefully devoted to demands of offense and defense. This means a new sort of industrial mobilization. Great factories that were founded for peace enterprises have been wholly absorbed in military uses. There has been also a great coördination of productive activity in order that the supplies that are so vitally necessary for successful military achievement may never be wanting. The facts that are becoming known in national headquarters on the subject of productive capacity will not be lost after the war closes. On the basis of this new knowledge will be founded new business practices of far-reaching consequences.

Already business men of foresight are looking ahead to those days of readjustment and are planning to meet the new trials which they are sure to bring. The government likewise has already begun plans in anticipation of reconstruction difficulties. The problems of that period will be of many sorts and of great difficulty. A list has been made of the chief ones as follows:

1. Demobilization of army and navy including reabsorption of industrial war workers into peace industries.
2. Industrial readjustment to peace conditions; among which may be stated:

- (a) Conversion of war industries to peace needs.
 - (b) Restoration of industries, curtailed by the war, such, for example, as the building industry.
 - (c) The sale of government property.
 - (d) Coöperation and regulation as compared with competition.
 - (e) Trade organization, which may result from the formation of war-service committees in various industries.
3. Industrial relations between labor and capital.
 4. Foreign-trade problems which are connected with the questions of continued export and import control.
 5. The tariff problem as it may be affected by terms of peace.
 6. Industrial and scientific research under the direction of governmental bureau.
 7. The relation of the fuel problem to the general industrial and commercial problem.
 8. The question of using the merchant marine, which is being built in the shipyards of the United States.
 9. The entire transportation problems as they will be affected by extended government regulation and control.
 10. The question of education, particularly in reference to industry and commerce.
 11. The entire question of insurance, including industrial and general social insurance.
 12. Questions of finance, to be placed under the direction of the Federal Reserve Board.

Such a movement as this will work for a new kind of business in the United States. There will doubtless result from it a higher degree of national unity than has existed in the past. There is no evidence, however, that the old industrial or commercial organizations are to be displaced. Once again it is a new spirit working through the old system. That its effects will be of fundamental impor-

tance and far-reaching, there can be no possible question. It is clear, then, that from this mobilization of industry will result another element in the new business.

New Legislation. Not the least among the changes in business will be that of a new attitude toward legislation that deals with business affairs. However one may feel about the legislation of the past, as to whether there has been too much or too little, a consensus of opinion will show that it has not been of the desired kind. One chief reason for this defect is that men have not been sufficiently well informed on the subject. Legislation has not in any sense been careful or scientific in the United States. As a matter of fact it has rarely been fully intelligent. The far greater part of it has been a matter of emergency when there has not been sufficient time for careful investigation or for a thorough understanding of the issues in the case. Such legislative work must be a thing of the past.

One method of accomplishing the ideals of the new business will be through more intelligent legislation. "The attainment of industrial democracy," says one writer, on the subject, "must come through scientific legislation." It is clear that more intelligent legislation can come only from a more thorough knowledge of facts. In order that the facts may be collected and interpreted, research of some sort is necessary. Once again the discussion comes back to the central point of all industrial and commercial progress — a more intelligent use of business data. One thing that is necessary to accomplish the aim expressed so frequently in these latter days, to give the control of government back to the people, will be attained only through a more intelligent class of citizens in and out of business.

Possibly another element in the new business of to-morrow will be a more intelligent, a more scientific kind of business legislation.

New Aims of Organization. One fault found with business as organized on the private, individualistic basis is its lack of plan. Economists have frequently said that production as a whole is without plan. All attention and effort has heretofore been devoted to the organization of details within the plant or store. The large problems, the external problems, have been left to take care of themselves. This has resulted in lack of adjustment between demand and supply. It is a severe criticism upon the intelligence of production managers that the capacity of manufacturing plants has so frequently outrun all possible demand for goods. It is estimated to-day, for instance, that the flour mills throughout the country could readily produce twice the amount of their present output. This could be done also without working overtime and without increasing the number of shifts. How is it possible for such an industry to continue successfully on a basis of this kind? There has also been the well-known estimate that normal demand for steel products would not utilize more than 65% of the country's productive capacity. There is, again, the question of mining coal, and particularly the mining of bituminous coal. So many mines have been opened and such a great output of coal has been made possible that it was necessary for the mine operators to neglect all veins or all pockets in the mines that were difficult of access or expensive to mine. Such a situation is obviously uneconomical. These are but samples of countless instances. There is need of some kind of readjustment.

If one adds to the above deplorable condition the greatly

increased productive capacity that has developed under the war demand, he will realize the danger that will result when this new demand ceases. Great numbers of industries have been increased in capacity. One manufacturer of national reputation who has received very large war orders has increased his production by 50%. Already he is making a survey of the country for the purpose of determining how best he can divert this increased capacity to peace-time enterprises. This man is only one among many with the same problem. Without some kind of supervision, some kind of comprehensive planning, disaster will almost inevitably result.

The chief difficulty in the past, it seems, has been that production was wrongly organized. "Production is not organized primarily for supplying needs; but for the purpose of extending profits to investors." (The *Annals*, Vol. LIX, p. 272.) The change will need to come, therefore, in the aims of organization. They doubtless will come under the new régime. The very surveys planned by the government will tend to change the purpose of productive organization. A better adjustment is almost sure to result. This, too, will be an element in the new business.

The Corporation. Much fault has been found with the type of business organization that has dominated in the past years. The corporation has been called a "being without a soul." There has been an element of impersonality connected with it which in the judgment of many has led to most of the wrongs that have developed from its activities. No individual seemed directly responsible for its acts; no one man bore on his conscience the burden of the consequences. These things must be changed. The entire attitude of the mass of people must become more

friendly to the type of organization which is to prevail. How this is to be done is the great problem.

There is no evidence to-day that the corporation as a type of business organization is to be discarded. There is a feeling, however, that it must be given a soul and a conscience. Some one must be directly responsible for the results of its acts. Better representation both of the small investor and the workman must be had in its management. This, too, will be an element in the new business.

Better Organization. Industrial research has constantly pointed to the need for more thorough organization within the business. American methods have notoriously been wasteful methods. The new cry is for conservation, not only of all natural resources but also of human life. Organization must extend more and more into detail and it must broaden to cover the entire country. This, too, is a result to be derived from the experiences of the war.

The adjustments which are to underlie the new type of organization have been outlined as follows:

First, *Investigation*: Finding out what to do.

Second, *Organization*: Building the machine that will properly carry out what should be done.

Third, *Records*: Gathering facts and statistics to be used by this organization in arriving at the right kind of conclusions in carrying out what should be done.

Fourth, *Planning*: Logically arranging and coördinating all details so that the various steps can be rapidly and efficiently carried out.

Fifth, *Standardization*: Carrying out the steps determined or actually doing the work in a proper manner. (C. E. Knoeppel, "Industrial Preparedness," p. 56.)

If these principles are applied both in individual enter-

prise and in all business combined, the results will be difficult to determine. One thing, however, is clear. In doing this, the United States will be falling in line with the other great nations of the world. More complete industrial and commercial organization along broad national lines is to be a large element in the new business.

Control of Essential Resources. There is another feature of the new business that needs consideration. It may be defined as the control of industry through a control of essential raw materials. Nations are just awakening to the significance that lies in the possession of basic materials. Compactly stated, the situation is this: Factories may be built anywhere; they are mobile; they may be carried to raw materials, to a labor supply, or to the proximity of a market. Labor, too, is relatively mobile and may increase its capacity in response to the need. But the resources of raw materials, the slow results of natural laws, are fixed, are immobile, and access to them must be kept open at any cost.

Resources may become essential in three different ways. There are the basic materials of industry such as coal, iron, petroleum, wood, tin, rubber, etc. They underlie a vast number of economic activities. They are required by the welfare of all the great civilized nations. This fact makes them essential. There are other materials, such as cotton, wool, wheat, corn, which require certain climatic and soil conditions. The standard of living of the greater part of the world's population demands these. Then there are materials, limited in quantity, nonreproducible, that are required by the best manufacturing processes. The aluminum industry requires cryolite, which is found only in a mine in Greenland, controlled by the Danish Government. Many of our familiar, commonplace conveniences

require asbestos, the source of which is in Canada and South Africa. Gutta-percha is necessary for ocean cables; it is found in British possessions.

Control over such materials offers a great bargaining power for the individual, corporation, or state having it. In this connection the following excerpts from a recent report of the British Dominions Royal Commission is significant:

"It is not difficult, however, to imagine conditions even in times of peace, in which it might become desirable to use the possession of these assets as an instrument of commercial negotiation." (P. 163.)

The bitter experience of England in the European war will not readily be forgotten. Already her manufacturers have made great progress in developing their own "key industries." The resolution made by Great Britain, France, and Italy at the Economic Conference held in Paris, 1916, gives evidence of a widespread desire for national independence in supplies of essential raw materials. There is a warning, also, in the report quoted above. "We regard it as vital that the Empire's supplies of raw material and commodities essential to its safety and well-being shall be as far as possible independent of outside control." (P. 183.)

There can be no doubt that this newly recognized power will have an influence upon the business relations of the future, both industrial and commercial. It must be remembered, however, that business chafes under such control. There is an immediate reaction to escape, to break down the barriers or to find a new road. Note the feverish search for new sources of potash, of nitrates, of manganese. The minds of thousands of alert business men will be at work to throw off the yoke. The one answer yet

is substitutes. But every new line of endeavor modifies business.

Socialization of Industry. A movement is gaining impetus both in Europe and America to remove from the domain of private-property rights any industry that affects the well-being of the entire social group. In the United States such an industry becomes a public utility; that is, private property devoted to public service, and passes under the supervision of a public service commission. In England measures have been urged to nationalize British coal mines, railways, and ships. In Italy there is a marked trend toward state monopoly of essential food-stuffs and raw materials. In Germany there has been an organized effort to socialize coal mines, gas, water, electric works, and tramways. Even certain private companies like the Rhenish Upholstery Cloth Weaving Company are transforming themselves into community businesses. "The whole economic life," says a recent traveler in Russia, "trade, and industry have been almost completely nationalized, socialized, and municipalized. Each large factory has become a small state for itself." There have been also the proposals, made to the Peace Conference at Paris, to internationalize navigable waterways, coaling stations, and strategic harbors. This movement may be called the socialization of industry.

It really does not matter whether the individual may approve or disapprove of the extension of general control, the substitution of general welfare for private gain in management of basic enterprises. The fact is that this influence is now at work; its leaven is already permeating the industrial and commercial loaf. It is becoming a part and probably a permanent part of future competition.

Productive Capacity of a People. There will be in the

business of the future a more thorough knowledge of world resources, of world demand, of costs. What will be done with this increased intelligence remains to be seen. It will still hold true, however, that the greatest returns will accrue to those who have the superior productive capacity. They gain most from every bit of new information, from every new invention or discovery, who apply what they know, most intelligently, effectively, and persistently. After all, what will count for most in the business of coming years is the training, the skill, the intelligence, the willing coöperation, and the persistent, unwearied effort of each people.

Technical skill and managerial ability, the general level of intelligence among a people, combined with the will and capacity to use these powers effectively, will overcome all handicaps. Every group will find its own economic level, that level determined by its relative productive capacity. Fortunate geographical location, where resources are abundant and communications are easy, will give advantage to some. This is inevitable. All of these things, however, may be, indeed have been and will be, overcome. The collective will of a people cannot be withstood.

More Intelligent Business. All the changes that have been outlined here about which evidence now exists point to certain definite conclusions. Both in individual enterprise and in business as a whole there is a common desire for a fuller knowledge, a greater intelligence. It is into terms of more intelligent business control that the new spirit must be translated. In this discussion the spirit of research has been called an attitude of mind, and from this attitude of mind will largely result the changes in business. The basis of intelligence, of better business control, rests upon a fuller knowledge of facts. Facts about industry

and commerce are to be secured most effectively by means of research. It is, then, by means of research, industrial and commercial, that the new ideals of business are to be realized.

Already the movement for the application of scientific principles to problems of industry is gaining momentum. The movement for science in management, so far as production is involved, is making headway in individual industries, and through studies for the promotion of efficient methods is being carried into a broader realm of business. The new field is that of commercial research. Here only a beginning has as yet been made. Interest, however, has been awakened in the subject, and it is believed that it will be developed with enthusiasm and with all possible rapidity. Numerous pleas have already been made for more accurate and more adequate accounting systems. In factory and in store there is need for useful records. If they can be of a uniform character in order that the data secured through them can be compared, the day of a fuller knowledge and a more intelligent control of business will be greatly hastened. In addition to systems of accounts, there is also the need for more general business research. It has been the purpose of this discussion to point out the general principles by which this research may be carried on.

Conclusion. In business, as in most complex and far-reaching activities, one can find the details for which he is seeking. The optimist will, no doubt, be able to discover the basis for his faith and hope. He will emphasize those elements that are good and will subordinate those that are bad. The pessimist, also, will find evidence for his position. He will emphasize the *bad* and minimize the good. In all human activity it takes considerable faith

to see that progress is actually made. No one will question the fact that there are in business to-day many men who need regeneration. It is a most difficult task to raise the general plane of business practice. Probably the most hopeful thing in the business of the future is that the great leaders in the country have had the vision of a new type of business and are hopeful that it may become a reality.

Heads of great corporations have been willing to go on record as declaring for a new standard for judging business practice. Their words spoken in this period of transition are not likely to be forgotten. It is believed that they were not intended to be forgotten. As an example of this faith and hope that inspires the leaders in business activity, the following will serve the purpose: "Before the really big work of perfecting American business can be done, there must be a change of heart on the part of both business men and those public men placed by the people in charge of government." (E. N. Hurley, "The Awakening of Business," p. 296.) This clear recognition of the problem is a great advance toward finding a solution for it. There are many others who will join in the belief that this change of heart is actually in progress.

In a more idealistic style the future of American business has been described by a great political leader who has appealed in an open and eloquent manner to the better impulses of business men. There is an element of contagious enthusiasm in his conception of the new type of business. "Are you not eager," he says, "for the time when the genius and initiative of all the people shall be called into the service of business? when newcomers with new ideas, new entries with new enthusiasms, inde-

pendent men, shall be welcomed? when your sons shall be able to look forward to becoming, not employees, but heads of some small, it may be, but hopeful, business, where their best energies shall be inspired by the knowledge that they are their own masters, with the paths of the world open before them? Have you no desire to see the markets opened to all? to see credit available in due proportion to every man of character and serious purpose who can use it safely and to advantage? to see business disentangled from its unholy alliance with politics? to see raw material released from the control of monopolists, and transportation facilities equalized for all? and every avenue of commercial and industrial activity leveled for the feet of all who would tread it? Surely, you must feel the inspiration of such a new dawn of liberty!" (Woodrow Wilson; "The New Freedom," pp. 220-221.)

That great changes of some sort will inevitably come and come quickly, there is no reason to doubt. The essential point at issue is whether the changes will be for the better or for the worse. The answer to this pertinent inquiry will depend very largely upon the increased intelligence of those engaged in business. The practices must become more fair to all parties interested. Competition as a system for organized business must become more efficient, or be displaced. Both of these desired ends can be achieved by a fuller knowledge of business principles. There is no other way. "Competition cannot be fair unless it is intelligent." (E. N. Hurley, "The Awakening of Business," p. 28.) The direct road to greater intelligence in business is through industrial and commercial research.

